DOCUMENT RESUME

ED 311 252 CE 053 258

TITLE Education and the Economy in a Changing Society.
INSTITUTION Organisation for Economic Cooperation and Development, Paris (France).
REPORT NO ISBN-92-64-13176-0
PUB DATE 89
NOTE 116p.; Proceedings of the Intergovernmental Conference on Education and the Economy in a Changing Society of the Organisation for Economic Cooperation and Development (Paris, France, March 16-18, 1988).
AVAILABLE FROM OECD Publications and Information Centre, 2001 L Street, NW, Suite 700, Washington, DC 20036-4095.
PUB TYPE Collected Works - Conference Proceedings (021) -- Viewpoints (120) -- Reports - Descriptive (141)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Adult Education; Adults; *Change Strategies; Children; Continuing Education; *Economic Change; Economic Development; *Economics; *Educational Change; Elementary Secondary Education; Foreign Countries; Higher Education; Science and Society

ABSTRACT

This report presents the proceedings and the background material of a conference representing the culmination of the Organisation for Economic Cooperation and Development's (OECD) work in the area of human resource development. The proceedings include (1) the opening statements of the OECD Secretary-General and the Conference Chairman; (2) an overview and summaries of the discussions prepared by rapporteurs, which focused on "New Relationships between Education and the Economy in a Changing Society," "Initial Education and the Preparation of Youngsters for Active Life," "Further Education and Training of Adults," "Strengthening the Scientific and Technological Potential for Social and Economic Development: The Role of Higher Education," and "Strategies for Change"; and (3) an overview of the conference, reports of the working groups, and the conclusions of the Chairman. (NLL)

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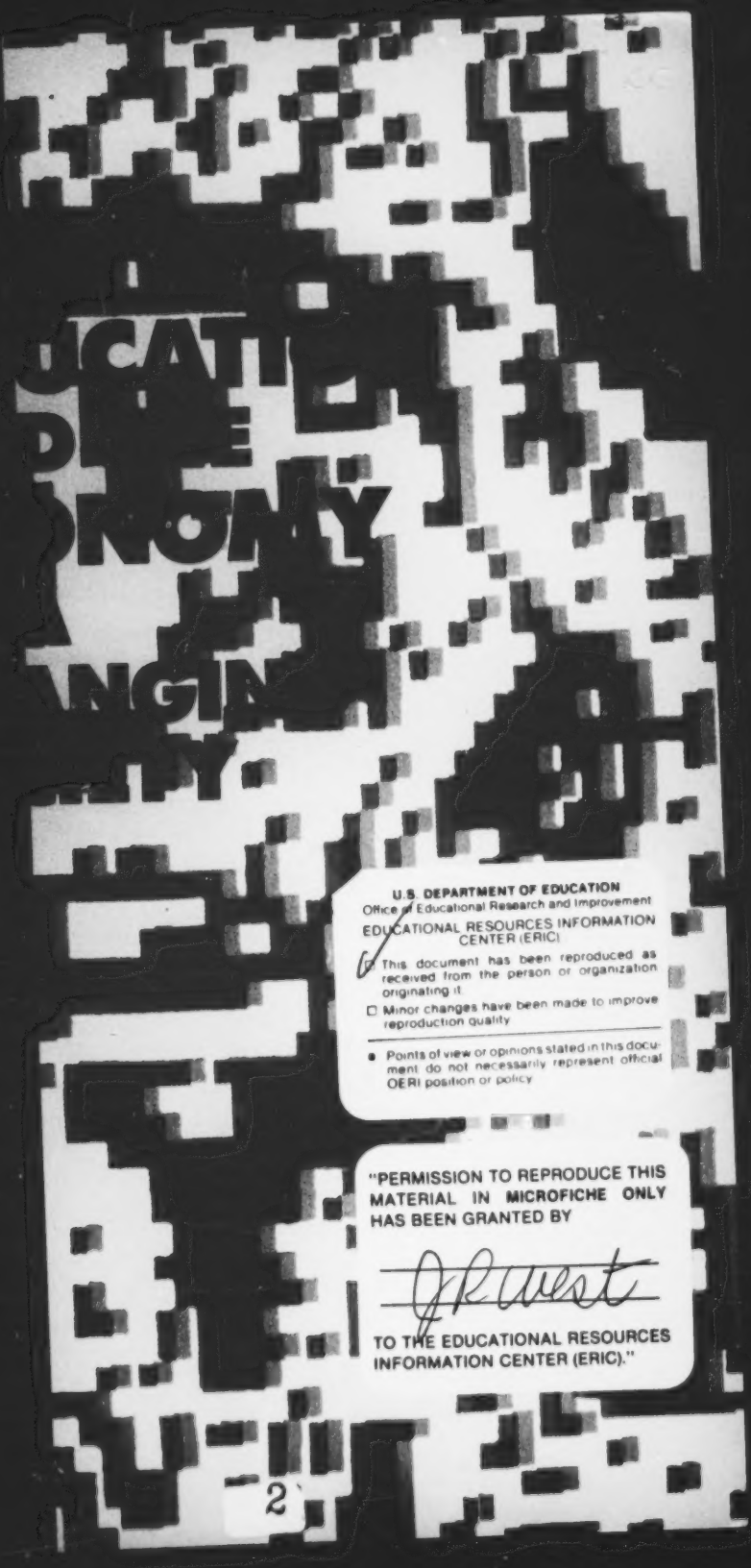

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EDUCATION AND THE ECONOMY IN A CHANGING SOCIETY

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
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Publié en français sous le titre

L'ÉDUCATION ET L'ÉCONOMIE
DANS UNE SOCIÉTÉ EN MUTATION

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At their last meeting in 1984, OECD Education Ministers highlighted the importance of the creative role which education can play in a world of social and economic change. In drawing attention to the strains on the relationship between education and the economy, they provided the impetus for examining the developments affecting that relationship, exploring how might it change, and considering what the consequences and implications would be for public policy.

In so doing, Education Ministers also foreshadowed a renewed political interest in education and training. Education and training have come to be defined very broadly to embrace a wide spectrum of "human resource development" activities, and to be seen as critical ingredients for meeting the challenge of the pervasive economic and social change which OECD countries have been experiencing over the last decade and a half. Moreover, they are seen not simply as tools with which public authorities can respond to economic and social developments, but as means by which to guide the trajectory of economic growth and transform it into social progress.

Education and the Economy in a Changing Society is a report on OECD's work in this area over the last few years. The work culminated in the Intergovernmental Conference held in Paris on 16th–18th March 1988. The report presents the proceedings of the Conference together with the background material prepared by the Secretariat. The proceedings include the opening statements of the OECD Secretary–General, Jean–Claude Paye and the Conference Chairman, the Honourable John Dawkins, Australian Minister for Employment, Education and Training, an overview and summaries of the discussions prepared by rapporteurs, and the conclusions of the Chairman. The Chairman's Conclusions were endorsed by the Education Committee, and noted by the Council of the OECD. The report is published on the responsibility of the Secretary–General.

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OPENING ADDRESS

by
J.-C. Paye
SECRETARY-GENERAL OF THE OECD

The presence of high-level delegations to the Intergovernmental Conference on Education and the Economy in a Changing Society is a clear indication of the prominence that education and training have acquired in the OECD countries. In the course of the discussions, during the Conference, there are a few observations to keep in mind to emphasize the magnitude and complexity of your task.

My first observation is that our societies are going through a period of rapid and far-reaching change. The signs of this are manifold — the causes are varied, and they are combining to accelerate the pace of change. Technological progress, international trade, the speed of communications, world competition, the promotion of women, urbanisation, demographic trends, the growth of leisure activities: these are just some aspects of the change which is posing crucial questions for our societies, structures and habits.

It is now recognised — and this is my second observation — that this change in our societies represents a very considerable challenge for our education and training systems. The analyses undertaken in the OECD, as elsewhere, in order to assess the effect of structural changes on economic performance all point to the decisive and fundamental importance of education systems. It is they that hold the key to possible progress and that determine each country's medium- and long-term prospects in world competition.

Nowadays more than ever, therefore, a great deal of responsibility rests on the shoulders of those who oversee our education systems. Moreover this responsibility is all the more difficult to assume — and this is my third observation — in that it is a question of finding the best possible compromise between change and continuity. Whether it is aimed at young people or adults, education has to prepare the individual for the changes that life will prescribe. It must also make him aware of his historical and cultural roots; its object must be to make him better established in his social environment. Education which was geared narrowly and exclusively to preparing for the exercise of a particular trade would fail to fulfil its true purpose. It would even be very likely to miss its limited objective. It is becoming increasingly clear nowadays that what is important is to teach everyone the best way to learn. In other words, each individual must be provided with the intellectual apparatus that will enable him, as and when needed, to acquire knowledge that is in a constant state of evolution.

My fourth and last observation is that education, training, teaching — however it is described — is nowadays more than ever everybody's business. Governments, local authorities, enterprises, trade unions, parents, pupils, students. There is no element of society which does not feel the need to express a view on the subject and to play a part in defining and implementing education policies. For everyone knows that our individual and collective future depends on it.

In dealing with education, this Conference will be discussing much more than conditions of economic efficiency. It will be discussing the most essential basis for equality among mankind and for social justice, without which there can be no legitimate prosperity.

OPENING STATEMENT BY THE CHAIRMAN

The Hon. John Dawkins, M.P.
AUSTRALIAN MINISTER FOR EMPLOYMENT, EDUCATION AND TRAINING
AUSTRALIA

As Minister for Employment, Education and Training in a country which faces a major process of structural change, I am keenly aware of the importance of the issues on our agenda. The same issues, I know, are of vital concern to you all. I look forward, therefore, to discussing our experiences, exchanging our views, and learning from each other of ways in which this vital relationship between education and the economy can be fostered and strengthened.

May I comment first on the significance of this Conference itself.

There has been considerable debate since the early 1960s over the contribution of education and training to economic growth, and the basis for its measurement. The early optimism of the "Human Capital" theorists gave way to scepticism and disillusion as the massive increases in educational expenditures during the 1960s and early 1970s were followed by the sluggish economic growth rates of the later 1970s and early 1980s. In this climate of disappointed expectations, it is not surprising that the political priority accorded to education in many countries suffered a widespread decline.

More recently, however, there has been a renewed interest in the contribution of education and human skills to national economic performance. The setting for this renewal has been a heightened recognition of the limits of macro–economic policies to deal with the economic problems still facing the countries of the OECD.

Despite some notable gains in individual countries in recent years, economic progress generally has been slow and unemployment continues to be well above an acceptable level. Traditional demand management policies, of themselves, have proven inadequate to deal with the scope of the adjustments still required. Increasingly, the focus of policy attention has shifted to micro–economic policies which directly address the sources of unresponsiveness in our economies.

The need for micro–economic reform has been nowhere more evident than in my own country of Australia.

As a country rich in land and mineral wealth, we had for long relied on the complacent assumptions of an earlier era — in particular, that natural resources rather than human skills would provide the export income needed to sustain economic growth and living standards. In 1985, however, such delusions were rudely and irretrievably

shattered, as the Australian economy suffered a sharp decline in the terms of trade for our traditional exports, a deteriorating balance of payments position and a major realignment of international currencies against the Australian dollar. As Minister for Trade and Resources at that time, the challenge for my portfolio was to address the structural imbalance in Australia's external trade, and particularly to encourage exports and import substitution in non-traditional areas of the manufacturing and service sectors.

The Government took a number of measures to set the appropriate macro-economic environment for structural adjustment, including floating of the exchange rate, deregulation of the financial market and fiscal restraint. Despite these policies, however, and the substantial increase in the competitiveness of Australian industry resulting from the depreciation of our dollar, adjustment was not as rapid as we required. Further measures were clearly necessary.

In taking counsel on those measures, we were struck by the persistent recurrence of issues relating to our education and training arrangements. For example, despite an unemployment rate of around 8 per cent, we received widespread reports that shortages of skilled workers were creating production bottlenecks — shortages for which the unemployed and new entrants to the workforce were unsuitably or inadequately trained. Again, the productivity of Australian industry was low by international standards, in part due to inappropriate management and work practices and the low skill base of the Australian economy. These factors contributed to low returns on investment, and served to discourage the new investments which would be necessary if Australia were to develop an internationally competitive industry base.

In response to problems such as these, the Australian Government has embarked upon a vigorous programme of micro-economic reform as an essential complement to our macro-economic policies. Changes are being implemented to make both the private and public sectors more competitive and responsive. In particular, we have realised that, if our industry is to be internationally competitive, it will need a highly skilled workforce not only possessing the skills currently required by employers, but also capable of responding quickly to the demands created by technological and structural change. To achieve a workforce of this calibre will require a more efficient and responsive education and training system which is more closely attuned to the needs of industry.

It was arguments such as these, in the Australian context, which led to the amalgamation in mid-1987 of traditionally discrete areas of policy into a single portfolio of employment, education and training. I understand that we are the only OECD country to have taken such a step to date. The objective of this amalgamation was to achieve a new coherence and consistency between our various education and labour market policies and programmes. In particular, also, we are seeking to combine the traditional values and objectives of education with closer links to industry and the labour market. Time will tell how successful we are in these endeavours.

While, in Australia, the urgency of change has been sharpened by developments in our external sector, the same broad issues confront us all. We all need to achieve better economic performance and exploit the benefits of technological change if we are to compete in international markets and improve the living standards of our population. To achieve these goals, our workforces need to become more flexible and highly skilled.

Traditionally, the comparative advantage of many OECD countries has stemmed from the quality of the workforce. However, the rest of the world has seen and learnt from our experience, and is acting accordingly. There is no room for complacency — rather, an urgent need to upgrade the quality of our education and training if we are to retain and strengthen our positions in the future.

Significantly, then, this Conference is both a revisitation of a long-standing debate and an event full of novelty and challenge. Chastened, perhaps, by the experience of earlier decades, we return to our theme with a new spirit of realism and determination.

We acknowledge that education is but one of many factors which contribute to the performance of our economies and labour markets, and that no single factor is dominant or sufficient on its own.

We accept, pragmatically, that the relationship between economic performance and human capital investment can never be measured with any precision; there are simply too many other factors involved, to say nothing of data deficiencies and other measurement problems.

We recognise also, however, that the world's most successful economies over the past two decades have given a high priority to education, skills and training as vital factors in their economic success, and have framed their policies accordingly.

Most importantly, we see that education and skills development will be of vital importance in responding to the various pressures which we will all face, to varying degrees, over the next several years:

- The pressures of continuing structural adjustment, and the associated requirement for new skills, greater flexibility and a high level of innovation;
- Pressures for continuing improvements in productivity performance, designed to make our national economies more competitive in the international environment;
- Pressures of demographic change, in particular the decline in the size of the youth population and the associated ageing of the population and workforce;
- Pressures associated with changes in technology and work organisation, including the shift away from traditional techniques of standardised, high-volume production towards more flexible production systems, especially in manufacturing.

Against this background, the vital question for this Conference is not whether education and training are a factor in economic growth and performance, but rather what needs to be done to improve their provision, by what means, in which directions, and where responsibilities for action should lie.

This Conference is organised around three major themes: the *first*, and most vital for the longer term, concerns initial education and the preparation of our young people for working life.

A high quality of basic education is an essential prerequisite for a vocationally skilled and adaptable labour force. Our schools provide the knowledge and skills base on which all later qualifications and skill development need to build. Consequently, while avoiding a narrow or rigid approach, we must ensure that the basic and essential knowledge of the curriculum is imparted to all students. We need to keep all children learning and achieving, and retain their options for further and higher education. The cost of failure here is too high to contemplate.

Similar concerns apply in the area of initial vocational education and training. Even with the best information on likely technological and structural change, we

cannot predict in any detail the types and mixtures of skills that will be needed in the future. The emphasis, rather, must be on broad and transferable skills, and attitudes which equip the workforce to adapt to and influence change.

In higher education also we need to strike a new balance between the traditional objectives of a liberal education and the external requirements of the economy and labour market. This is not to advocate a narrow vocationalism in our universities and other tertiary institutions; on the contrary, the base of many existing courses will need to be considerably broadened if we are to provide the foundations on which further education and training can be built. Industry too will need to play its part, both in influencing the design of higher education courses and in turning the broadly-based skills of new graduates to the particular requirements of the workplace.

The **second** major theme concerns the further education and training of adults.

The contribution of the education system to economic development will depend not only on the quality of the initial education provided to our youth but also, more immediately, on our ability to develop and continuously upgrade the skills of our adult workforce. Traditional skill requirements have already undergone significant change as a result of the rapid spread of micro-electronic applications in industries such as manufacturing, finance and the wholesale/retail sector, and further changes will inevitably occur under the influence of continuing improvements in technology. The needs for skills upgrading and redirection during working life will apply to all levels of the workforce, including management.

It is in this area particularly where the links between education and the economy are clearest and most direct. Further education and training is usually expected to have a direct impact on productivity, with implications for profitability and real wages. Since the benefits are largely private, there is a strong case for private involvement in both funding and provision. What then are the responsibilities of employers, governments and individuals in organising and financing further education and training?

This is a question with which we in Australia are currently grappling. Clearly there is a role for a range of providers of further education and training, including traditional tertiary education institutions, enterprises and other private training providers. Further education and training requires an appropriate balance between off-the-job and on-the-job training, and it is important that these components are carefully integrated. This will require articulation among courses and between courses and work experience.

Formal education institutions, in Australia at least, have paid little attention to such matters in the past. They now need to experiment with new entry criteria to recognise the practical skills and experience of older students, new methods of teaching and accreditation, and new course offerings. The educational establishment needs to recognise that, not only are these developments inevitable if they are to continue to be part of the mainstream of our societies, they are also capable of enriching the traditional education sector and the experience of students and teachers.

We also need to provide incentives to adults to undertake further education and training. This will entail changes to job design, the provision of career paths to all employees and the evolution of wage systems which recognise and reward the acquisition of skills.

The **third** theme concerns the links between education and the economy in the area of scientific and technological research. Few would question the importance of research and development if our industry is to remain internationally competitive. But

what is the appropriate role for governments in encouraging effective research and development?

One of the most difficult issues is the selection of priorities for research, and the appropriate balance between basic and applied research. It is clearly essential that research in higher education institutions be relevant to our economic and social needs. But, at the same time, there are strong links between pure and applied research, as illustrated by the fact that some of our largest companies invest considerable resources in fundamental research. Clearly, there is a role for governments in both areas, but the problem, as always, is to strike the appropriate balance.

The dissemination and application of knowledge from scientific research is as important to economic success as the research itself. This is an area where we in Australia have much to learn, and where close links between our higher education institutions and industry are necessary to achieve the desired results. Encouraging the two parties to participate in a productive partnership must be one of governments' major objectives in this area.

Even from this brief résumé of the issues on our agenda, it is clear that the relationship between education and the economy is now of vital interest to us all. Let me comment briefly, however, on two particular matters which are often a source of concern to governments in their consideration of this relationship.

The first concerns the situation of disadvantaged groups in our society, and the fear that an economic edge to education policy-making will somehow lead to their interests being downplayed or even forgotten. I for one do not hold to that position.

There is a strong and well-demonstrated relationship between low socio-economic status, lack of skills, and high levels of unemployment and other forms of social disadvantage. Without appropriate government intervention, therefore, people lacking in educational competences and vocational qualifications are likely to become even more disadvantaged over time in an economic framework which increasingly values skills and relevant employment experience. Particular attention will need to be paid to those seeking to enter or re-enter the labour force, and those without marketable skills who are displaced from employment through structural and technological change.

A society which does not respond to the needs of its disadvantaged groups will incur the heavy social and economic costs of under-developed and under-utilised human resources. From this viewpoint, amongst others, I see the goals of equity and efficiency in our education and labour market arrangements as fundamentally compatible rather than conflicting.

The second issue I would mention relates to the intrinsic benefits of education, and the concern that these should not be jeopardised by an undue emphasis on external or "instrumentalist" goals.

Once again, I see no inherent conflict between these two sets of objectives. On the one hand, education must continue to accept the responsibility of preparing young people for active adult life, and for helping individuals to develop the full range of their talents and interests. This goal extends well beyond the vocational objective as such, into areas such as citizenship, an active participation in community life, and the productive use of leisure. On the other hand, for most people, such personal development objectives cannot be separated from the level of satisfaction that they derive from working life. This is likely to be greater if the skills they possess match those in demand in the labour market. At a broader level, we need to recognise that the standards of community resources and the quality of life outside of work will be

heavily dependent on the success of our efforts in economic growth and structural adjustment. In all the issues before us there are some strong similarities between OECD Member countries, but also some significant differences. We differ, for example, in our particular sets of economic circumstances and the mix and speed of the adjustments required. We differ also in the balance between public and private sector efforts in education and training; in the mix between basic and applied research; and in the present balance between vocational and general education.

Each of our countries will need to strike its own balance in these matters, to find its own solutions appropriate to its particular set of economic circumstances, social objectives and institutional arrangements. We can all learn much, however, from the experiences of others. I am confident that the proceedings of this Conference will help us all in our national efforts to meet the challenges before us.

Part One

THE ISSUES

I

NEW RELATIONSHIPS BETWEEN EDUCATION AND THE ECONOMY IN A CHANGING SOCIETY

WHAT DOES EDUCATION HAVE TO DO WITH THE ECONOMY?

In the midst of the change and uncertainty that are sweeping the OECD economies, "education and the economy" has become a catch-phrase for a vague but urgent dissatisfaction with the *status quo*. It does not proceed from well-articulated ideas of what the two — education, the economy — have to do with one another or what direction policy changes should take. Rather it is motivated by inescapable evidence that the OECD economies are changing in unprecedented and unpredictable ways. The litany of causes and effects (often inextricably enmeshed) is all too familiar: high levels of unemployment and long-term unemployment; sluggish output and employment growth; sharp declines in manufacturing employment and expansion in service sector employment; intensified international trade competition; changing occupational composition of employment and changing skills and qualifications requirements within occupations; technological innovation permeating production and consumption. The economic and social toll of adjustment has been high and shows no promise of dropping off in the medium term.

The unfamiliar dynamics make it impossible, however, to translate political concern and commitment to solutions into consensus about what constitutes effective remedies. Whatever is done in a policy sense will be constrained by certain new parameters. First, the situation today is not simply the result of conjunctural forces that would imply an eventual return to pre-oil shock normalcy. Too much of what has happened is not reversible. This means that from a policy point of view one has to reject arguments for "sitting tight". While it is not clear what new policies might be required, the fact that so many policies already in place are being seen as a drag on successful structural adjustment of OECD economies demonstrates very clearly the need for some change.

Second, these economic changes occur in an environment of fierce international competition, where income and job opportunities can never be taken for granted. In an open economy, the competitiveness of the workforce is closely connected with its ability to acquire the right kinds of knowledge and skills, and hence also with its general level of cultural sophistication.

Third, the focus of action for facilitating adjustment encompasses much more than the usual macro-economic levers of fiscal and monetary policy. Structural, micro-economic level, and institutional dynamics also need to be dealt with. And this requires not just government intervention, but the consensus and concerted participation of employers, trade unions, producers, and consumers. At a governmental level it requires not just participation of those concerned with demand management policies, but those concerned with labour market, regional development, science and technology as well as education and training policies, to name only a few. This is because output growth will not translate into employment growth if internal and external labour market rigidities interfere with the reallocation of labour from one sector to another, or qualifications deficiencies interfere with the mobility of workers from declining professions to expanding ones. Technological innovation will not translate into economic progress if breakthroughs remain sealed in a laboratory, dissemination of new ideas slow down, or consumers are incapable of utilising advanced technologies to their full advantage.

But why are education and the economy linked in almost any current discussion of economic dysfunctions or strategies to improve economic performance? After all, their logical overlap is only partial. On the one hand, economic performance is the product of a multitude of factors of which education is only one; on the other hand, education serves much more than economic objectives. The answer lies in the reality that both "the economy" and "education" are changing in ways that increase their interdependency.

EDUCATION AND THE ECONOMY: CONVERGING FUNCTIONS

In an examination of current economic activity in the OECD area, three observations stand out. First, the "human factor" is assuming pre-eminence as a factor of production. Whether it is as the labour complement to technologically advanced, "smart" capital equipment in the manufacturing sector or the very embodiment of productive capacity in the expanding service sector, the skills and qualifications of workers are coming to be viewed as critical determinants of effective performance of enterprises and economies. But in this climate, fuller personal development opportunities, widely accessible to all groups in society, are essential in order to ensure that economic growth translates into effective social progress. If that relationship between economic growth and social progress cannot be maintained, the social consensus so necessary for harmonious adaptation to changing economic circumstances will be threatened. Inevitably, under these conditions in which skills, qualifications, innovation and personal adaptability assume greater importance, the human resource development process — education and training — attracts greater attention.

Second, the development, application, dissemination and mastery of advanced technologies are the necessary ingredients of economic success in technologically advanced societies. In addition to a workforce capable of applying advanced technologies, this requires technologically literate consumers. It also requires a research capacity that can stay at the frontier of new knowledge (including the humanities and social sciences) and is well positioned to facilitate the transfer and utilisation of knowledge that will ensure timely development and commercial application of advanced technologies.

Third, the very notion of what it means to be active in society is changing. Employment is no longer the *sine qua non*. Widespread unemployment, chronic long-term unemployment, and longer life expectancy beyond retirement have raised to high, nearly unmanageable levels, the financial dependency upon the working population while creating a large class of persons whose self-fulfilment depends on more than passive receipt of transfer payments. This means that educational preparation for an active society needs to be much more than simple preparation for working life.

Fourth, that which is "education" is becoming less clearly distinct from that which is "the economy". The change is most dramatic with respect to the skill formation process, which now takes place more and more in the context of labour market programmes and education and training provided by enterprises and trade unions. This is not the result of any reduction in the volume of that done in the formal sector traditionally within the ambit of education policy-makers. Rather, it is in response to rapid shifts in skill and qualification requirements in the labour market, together with a heightened sensitivity to educational deficiencies. The implication is that education is less synonymous than ever with schooling. Moreover, the cost of failure in initial education is going up insofar as it inhibits further learning; even for the majority that succeed, initial education is not enough.

A further remarkable convergence is occurring with regard to the process of scientific and technological innovation. Research and development is less and less an activity found only in higher education institutions. It occurs increasingly within enterprises, especially as part of joint ventures linked to corporate growth and diversification, and regional development strategies. These developments result from, and intensify the pressure for, a more entrepreneurial approach to research and development. This may have the result of shortening the time horizon of university researchers and inducing a bias against basic research as well as research in the humanities and certain social sciences in which the commercial pay-off is either not apparent or too remote in time to be commercially significant.

PRESSURES FOR FURTHER CHANGE IN THE RELATIONSHIP BETWEEN EDUCATION AND THE ECONOMY

As the overlaps in interests, if not functions, of education and economy have increased, changes have occurred. They have not been painless, though, nor have they eliminated points of difference or resistance in either education or the economy. The recent report by the OECD Secretary-General on *Structural Adjustment and Economic Performance* (OECD, Paris, 1988) outlines in painstaking detail the kinds of further progress that are needed for successful adjustment to the changing shape and pace of economic activity. There are enormous pressures for change in capital, labour, and other factor markets, in product markets, and in the role of public authorities in facilitating market operations while attending to the public welfare.

Changes in the relationship between education and the economy have also brought into high relief the differences in perspectives found in the two. Nowhere is this so evident as with regard to the time horizons taken by the different institutional players. Public authorities responsible for the education and development of youngsters and their preparation for working life view the process as a long-term one whose length

and expense are justified in no small part by its life-time flow of benefits to individuals as well as to society. Firms, on the other hand, take a shorter-term view. Uncertainties about business conditions and production methods make it difficult to project skills and qualification requirements far in advance; the needs to respond to changes in current business conditions and quickly incorporate newly available technologies into product and production methods limit the time available for the retraining. These twin pressures — foreshortening the time horizons that firms take relative to public authorities in planning and undertaking training — are further intensified in some cases in which firms insist on allowing only minimal time and cost for education and training, and on recovering quickly all the costs of such training. Some convergence of these different perspectives and time horizons seems desirable. It would be useful to ensure that initial education does take adequate cognisance of changing economic realities, including changes in skill requirements and the need for second chance opportunities and retraining by adults. At the same time social partners should treat education, training and retraining of workers more as the investment good that it is. This means recognising adequately the mutual long-term nature of its benefits as well as the necessity for planning it carefully, using it as a means for strategic change, and ensuring that the period over which its costs are recovered corresponds better to its useful life.

There are other intense pressures on education. Some of the severest criticism has been directed at the role education plays as a supplier of relevant skills to the economy. Justified or not, politicians, employers and trade unions have claimed that education's performance in this role has been uneven, to such an extent that national differences in economic performance can be attributed to varying degrees of educational effectiveness. In this regard, the pressures are very much an extension of arguments for doing what is necessary to improve economic performance.

The pressures are intense on equity grounds, as well. As the "human factor" comes to assume greater importance, the skills formation process by which individuals acquire competences and qualifications promises to become a more crucial determinant of economic well-being and self-sufficiency. Increasingly, the "functionally illiterate" — those with inadequate educational preparation and access to educational opportunities, or those with inappropriate qualifications — risk being marginalised, unemployed or having access to little more than unstable, low-paying jobs. Moreover, insofar as credentials measuring educational attainment and competences are used more in the labour market as proxy measures of qualifications, they are likely to be used as tools for selecting workers for employment, promotion, and access to further education opportunities as well. Hence, those who lack initial skills and qualifications may find themselves cut off from the further education and training by which they could acquire additional skills and qualifications. As the penalty for educational under-achievement increases it becomes more necessary to ensure that all persons reach at least some minimum threshold of competence. This requires more than ever that initial education not only be accessible to all, but that, by whatever means necessary, some minimum quality of outcomes can be guaranteed.

None of these direct or indirect pressures for change is at variance with the basic mission of education. The commitment to the mission is, in fact, reinforced by the ever-widening consensus about the importance of human capital and the growing knowledge-intensiveness of the pathways to sustained economic growth. But that support is not matched by a consensus with regard to what the policy responses should

be, except that they cannot be anything as simple as a quantitative expansion of existing educational arrangements nor can they be based on a monopoly of public provision. On balance, the emphasis has clearly shifted from growth to change.

The process of change, though, is likely to be neither simple nor straightforward: the existing arrangements are complex and their consistency needs to be preserved. There is also a need for a smooth interface between them and new arrangements that emerge as a result of the growing overlap between education and the economy. Indeed, that is the heart of the matter in this Intergovernmental Conference. But the process of change also has to take cognisance of the background changes underway in the society. These changes have impacts on education, which, though not always direct, are significant. Three background elements stand out: structural factors affecting the nature and level of economic activity; pervasive, frequently long-term unemployment as a chronic, long-standing feature of many OECD economies; a variety of social changes and pressures stemming from demographic developments and shifts in social values and behaviour. Each is discussed in turn below.

TECHNOLOGY, FLEXIBILITY AND STRUCTURAL CHANGE

The most immediate changes in performance and skill requirements with wider implications for education and training are the result of highly-interrelated impacts of faster structural change in the economy, more pervasive and rapid technological change, and a necessary shift towards more flexibility in the labour market and the organisation of work, including working-time patterns. The central problem is the risk that the capacity of a highly interdependent, open and fast-moving international economic system to generate change will outstrip human and social capabilities – unless education and training can enhance the capacity of individuals to change, and thereby increase their security[1].

The first major implication is that education and training institutions have to play a major role in labour force adjustment. Of course, one part of the strategy of enterprises seeking to maintain their competitive position in rapidly changing world markets is to invest more heavily in human capital, and to rely more than in the past on the flexibility of workers in internal labour markets. They cannot succeed in this without more and different partnerships with external education and training institutions. However, to the extent enterprises succeed in absorbing external shocks through internal flexibility, natural labour turnover is reduced. Hence new entrants into the labour market, deterred by low turnover in stable enterprises may be forced to depend increasingly on rather short-term, frequently service-oriented, "flexible" jobs as a means of getting a foot-hold in the world of work. Education and training institutions can play two roles in facilitating this secondary adjustment and averting segmentation of the labour force into "core" and "peripheral" employment. Existing education and training systems which are more geared to producing "employees" for large organisations, need to recognise an emerging entrepreneurial culture and better equip individuals for entrepreneurial activity. Education also has a crucial role to play in promoting mobility between the jobs held by "insiders" and "outsiders". Intensified school-to-work transition measures may help here. Where that is not enough, it may be acceptable for young people to take "flexible" jobs to get into the labour market, with less than average wages and social security coverage, but not if they do not have a

reasonable expectation of migrating into jobs with more career prospects. Only education and training can underwrite that expectation.

The second major implication is that technical and structural change imply a bigger output from the education system of highly-skilled, notably scientific and technological, personnel. Here the main problem seems to be the combined effect of unforeseeable demands from the economy and the built-in time-lag of the educational response. It would no doubt help if the opportunities for advanced and higher education were more flexibly organised (modular construction of qualifications, more interface between educational institutions and enterprises), and if there were more skill-based wage differentials. At present, it does seem that policy intervention is needed to secure a quantum jump in the quality of the delivery system, particularly with regard to the secondary curriculum, a larger role for tertiary non-university institutions, and greater attention by the universities to their professional preparation roles without vitiating their traditional functions.

A third implication is that the demand for adaptability on the part of workers makes it increasingly difficult for unskilled workers and those lacking the basic competences needed for retraining to secure and retain employment. This raises the cost of educational under-achievement and intensifies the pressure on compulsory education to meet the learning needs of under-achievers and encourage additional study or, at least, to ensure that school-leavers have a suitable foundation for immediate employment and to enable them to pursue further education and training as adults.

The fourth major implication is the need for more effective transfer of knowledge from the higher education system to enterprises. Given the wide historical gulf between higher education and the economy in many OECD countries, notably in Europe, governmental pressure on higher education, and in particular the universities, to be more responsive to economic needs is inevitable. But given the increasing dependence of the economic system on the creativity of higher education, in terms of new knowledge and its potential applications, such pressure needs to be carefully applied through incentives and consensus to achieve willing co-operation.

UNEMPLOYMENT AND THE "ACTIVE SOCIETY"

Whilst education authorities have consistently and persistently asserted that education is neither responsible for nor can resolve in the short run the problem of high rates of unemployment, there are three reasons for re-examining the role of education in the present situation:

i) there is no reasonable expectation that foreseen growth rates will bring unemployment down to acceptable levels;

ii) a major part of unemployment is "structural", meaning that many of the unemployed are "unemployable" because of changing economic requirements, the inadequacy of their educational attainments, and/or the demoralising effects of previous unemployment; and

iii) education and training are, in fact, already a major feature in many of the country policies to help some groups, such as young people and women, at a particular disadvantage in the labour market.

Historically, there has been a sharp distinction between the "active" and the "non-active" population, the income needs of the latter being taken care of by the tax

transfer system. High rates of unemployment, and changes in social and political values, are eroding this sharp distinction, particularly as far as the young unemployed are concerned. For example, when the OECD Council met at Ministerial level in 1987, it was agreed that "employment and social protection policies need to evolve so that displaced and unemployed people are given not only income support but also — especially through training — opportunities and incentives to get back into work or other useful activities such as local employment initiatives". As more emphasis is given to getting as many people as possible into an active role in society and as definitions of "active life" extend beyond paid employment, it is conceivable that education and training can become a positive alternative to income maintenance and/or a bridge to labour market or other socially-desirable activities.

The first issue that this raises is whether post-compulsory education and training, in its variety of forms and including alternation between education and work, is not in itself an evolution of the labour market as much as a development of education and training opportunities. The traditional youth labour market has been transformed to such an extent by structural changes which have eliminated many of the jobs young people formerly took, and by the widespread introduction of labour market programmes, that in some countries it has virtually disappeared[2]. In the United States and Japan, most young people are in education and training up to the age of 18, and Europe is catching up fast[3]. But the evolution of this new stage of insertion into the world of work and adulthood is not complete. In some countries much of this extended enrolment in education is not by choice but is due in large part to the lack of employment opportunities that young people could pursue otherwise. It may ultimately leave young people better qualified, but it does nothing to reduce their financial dependency. Further evolution of education and training in this sector, if it were to involve co-operation with enterprises and trade unions and were to be linked to a minimum youth income, would contribute to helping solve the unemployment problem while raising overall qualifications.

The second issue is the role that education and training can play, in conjunction with other policies, in alleviating the problem of long-term unemployment. The growing problem of the long-term unemployed cannot be solved through income maintenance policies alone. A recent OECD evaluation of the relevant labour market programmes emphasizes the need for preventive policies, mainly education and training; and for those who enter long-term unemployment the need for combined labour market and educational programmes[4]. The record of country measures in dealing with the most acute problem of all — that of disadvantaged urban youth — points to the reality that public policies alone are not enough. The only real route to their insertion in society is through a mix of policies and co-operation with the private sector. This can be achieved only at the local level where education and training institutions have a key role to play, but again, not in isolation. If such policies do not succeed, there remains the daunting possibility of a "lost generation" of young people who never really find their place in the labour market, even in adulthood, thereby missing out on economic and social opportunities more generally and, as a consequence, threatening the social consensus so necessary for economic progress.

Similarly the problem of long-term unemployment among adults requires education and training linked to locally based public-private co-operative strategies for insertion into the labour market. Among the long-term unemployed, those with low levels of educational attainment and achievement are vastly over-represented. While

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they may have been adequately qualified when they first started work, technologically and structurally-induced changes in skills and qualifications requirements have overtaken them, leaving them functionally illiterate — unqualified for emerging jobs and incapable of participating in skill training to requalify themselves because they lack access to it or lack the basic educational competences needed to participate in it. The cost of failure here, as with younger would-be workers, is isolation from the economic and social mainstream.

DEMOGRAPHIC AND SOCIETAL CHANGE

All the above challenges to education must of course work themselves out in a context of profound demographic and societal change[5]. The interaction between levels of income, social aspirations, fertility and family patterns and labour market and educational participation are exceedingly complex, each parameter feeding back into the others as individuals and families change their assessment of how to optimise their welfare. However, as far as education is concerned, the following features appear to be the most important:

i) *The relative ageing of the population, which is occurring as life expectancy rises and fertility rates fall.*

As people live longer, it is likely that in some countries retirement will be postponed because persons are productive longer and financing requirements of pension and care will demand it. Simultaneously the market for services and medical care for the elderly and others will expand. Education will have a role in facilitating the retraining for and continued participation of older workers in active life, as well as in preparing the workforce in the growing market for the elderly.

ii) *The relative ageing of the labour force which is occurring because young persons' share of the total labour force declines (even if retirement ages do not rise) as declining fertility rates lead to smaller or more slowly growing (relative to other age groups) numbers of labour force entrants.*

While most countries are now suffering from labour surpluses in general, and high rates of youth unemployment in particular, demographic developments suggest that labour shortages may be a reality in some countries by the end of the century. As demographic developments reduce the number of young labour force entrants, they will also restrict a critical source of renewal of labour force skills and qualifications. This will increase the pressure on society and education to ensure, not just for reasons of social justice but economic efficiency as well, that girls and women, foreign workers and their children, economically and socially disadvantaged, and others who have not always had ready access to educational opportunities, gain such access and acquire the qualifications needed for employment.

iii) *Increasing numbers of families in which only a single parent is present and is working, or both are present and working, as well as increasing opportunities for parental leave for child-rearing.*

At one level, these developments suggest that education for children might be better arranged in co-ordination with work-day schedules of parents and adequate child care

arrangements. At quite another level, the opportunities for family rearing which allow at least one parent extended periods of time out of the labour market, intensify the need for education to facilitate re-entry into the labour market.

iv) *Extended participation of young people in education and training within more flexible arrangements, thereby changing their life-cycle consumption of education and training opportunities.*

As full-time career employment is postponed and the youth labour market continues to be transformed, it becomes increasingly important that education and training opportunities are not based on an inflexible model of continuous initial education. Rather, it should allow simultaneous participation in education and work, alternation between the two, and well-established and easily accessible opportunities for "second-chance" education.

When combined with the more flexible organisation of working time (both on a weekly and an annual basis) that the new technologies make possible and that changing social preferences require, the demographic and social changes referred to above lead to significant changes in life-cycle patterns in which the role of education becomes crucial. In light of this problem, the question unavoidably arises as to whether it is possible for formal education systems to achieve the degree of responsiveness and flexibility necessary to meet these changing demands. Will competition from new types of education and training institutions, including private enterprises, be the only way of forcing the process of adaptation? If the basic requirement is for a more "recurrent" type of educational provision, it has to be recognised that the progress made since the concept was first introduced in the 1970s has not been great. Thus, the question of "strategies for change" is important, and it is obvious that today this question is a *political* one. At least it seems self-evident that any feasible strategy for change must address not only those who supply education, notably governments and teachers, but also those who "consume" it, notably young persons, their parents, employers and trade unions.

CONCLUSIONS

How countries proceed in adapting to the changing relationship between education and the economy must no doubt depend on the state of existing education and training arrangements, economic conditions and prospects, and background circumstances.

In evaluating those conditions, it is important to acknowledge the changes that have already occurred and contributed to economic and social progress to date. At the same time, it is important to avoid indiscriminately overburdening education and training providers or social partners with new or excessively diverse responsibilities, without recognising and evaluating the inevitable trade-offs and costs of assuming them.

But it is clear that there exists a *problématique* common to all, including the OECD "developing" countries where the political, economic and social context for educational policy has changed most rapidly in recent decades: that existing arrangements, no matter how dynamic they may be, deserve close scrutiny. All countries are now very dependent on "human capital" for their development; the costs to individuals and economies of low educational achievement and under-investment in

human capital are high and rising. The free-wheeling quantitative growth of the 1960s and 1970s is no longer the answer in a world where the key to growth is quality of economic performance and competitiveness. In a changing economic and technological environment, persons need to enter the labour market with at least a minimum level of competences: education and training have to be "recurrent" and involve a wide range of institutions and interests in both planning and provision; research, development, and the application of advanced knowledge need to be carried on in a setting that is responsive to near and long-term economic and non-economic concerns and facilitates transfer of knowledge.

The chapters that follow examine in some detail the three functional aspects of education that form the basis of its inter-relationship with the economy. Chapter II considers how initial education and preparation for working life are changing while Chapter III examines developments with regard to further education and training of adults; Chapter IV considers how to strengthen the scientific and technological basis for social and economic development. Finally Chapter V examines policy mechanisms for accomplishing changes needed in education policies and practices and the relationship between education and the economy, by tapping the synergy that is possible with concerted action by all the relevant players.

NOTES AND REFERENCES

1. OECD (1986), *Flexibility in the Labour Market: The Current Debate*, Paris
2. See OECD/CERI (1985), *Becoming Adult in a Changing Society*, Paris.
3. OECD (1984), *Educational Trends in the 1970s*, Paris.
4. OECD (1988), *Measures to Assist the Long-term Unemployed*, Paris.
5. See OECD (1988), *Ageing Populations: The Social Policy Implications*, Paris.

II

INITIAL EDUCATION AND THE PREPARATION OF YOUNGSTERS FOR ACTIVE LIFE

THE BACKGROUND OF CURRENT CONCERNS

After a period of general curtailment and a feeling of "depression" in education and training, there are now signs in many quarters of renewed optimism, rising expectations, and an awareness of new challenges. One major reason why attention focuses anew on education is recognition of the contribution it can and should make to improved economic performance and social progress. In many OECD countries, this has caused the spotlight to fall sharply on initial education, and on schools in particular. Relatedly, there is a general call for improvement in the *quality* of education, though that concept is open to a wide variety of interpretations[1]. Since the two dominant features of the foregoing period had been expansion (quantitative growth) and the widening of access to a new clientele (equality of opportunity), the current emphasis on quality might be seen as a natural development as countries take stock of the previous growth of education.

Renewed optimism and the call for greater quality are often accompanied, however, by sharpened criticisms of initial education. In some countries, notably the United States, fears are frequently expressed that their nation's economic competitiveness has suffered in direct relation to the decline, as measured by some indicators, in college entrance test scores or functional literacy — i.e. schools are accused of not meeting their traditional goals satisfactorily. In others, especially European OECD countries, the exceptionally high levels of youth unemployment experienced over recent years have been but the most glaring problem that has led the charge commonly to be made that too many youngsters are being inadequately prepared by their initial education for the world of work; that they leave education with either inadequate mastery of the knowledge and skills relevant to the contemporary job market, or with inappropriate attitudes and values, or both. In this case, the concern is instead that traditional objectives must be complemented by learning that is more closely tailored to the labour market. A third view might be more readily associated with Japan, namely the concern increasingly voiced in that country that their education system, at present brilliantly accomplished at imparting mastery of the traditional syllabus, is perhaps rather less successful in engendering the creative, higher-order skills that will increasingly be required in tomorrow's world.

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Whatever the balance of evidence in countries about education's past achievements (and assertions about standards are, in any case, notoriously difficult to support or refute convincingly), the growing complexity of today's world, the quickening pace of change, and sharpening international competition, together mean that the requirements now held out for education are being constantly raised. One obvious question is thus, "are modern societies expecting too much of initial education and training?", to which it might be replied that levels of expectations as such cannot be too high but that they certainly can be, and have become, too manifold and diffuse. Parents, employers, teachers, and most of all, young people themselves are confused about what is expected and what is on offer. Coupled with the speed of change being experienced in modern education and training systems, as well as in the economy and society at large, this suggests that a wide-ranging process of reappraisal of educational aims and missions be undertaken in OECD countries, that includes all the relevant parties, with a brief that is ambitious yet also realistic.

Few would suppose that such a reappraisal can be undertaken easily or without contention. Critical balances need to be struck between competing considerations and perspectives. One such balance is between the immediacy of so many problems and the need for a long-term understanding of developments to be applied. The latter derives from such widespread socio-economic change as, for instance, the creation of a veritable "pre-adult" status with the extended preparation for employment and active life that now typifies OECD societies[2]. Long-term perspectives are nevertheless confronted by the uncertainties inherent in future social and economic change — how should this uncertainty be accommodated in the assumptions made about the education and training most suitable for today's generation of young people? A no less critical balance occurs because the undoubted role of education to contribute to economic objectives should be tempered by its long-standing missions of allowing individual development and an informed citizenry to flourish. It is thus necessary that the current emphasis on enhanced educational flexibility and responsiveness should not jeopardise those missions that remain constant and unchanging.

Broad questions about the organisation and content of education also enter any major reappraisal of the purposes of education and training. It has become increasingly recognised in many quarters that education is concerned with considerably more than its manifest task of transmitting knowledge and skills, important though this is. Whether in school classrooms or training workshops, the young person is also learning valuable non-cognitive socialisation lessons about attitudes, values, and approaches to work in general. Preparation of youngsters for active life extends well beyond the acquisition of cognitive knowledge to embrace such purposes as gaining familiarity with the workings of enterprises and the job market, and the learning of particular attitudes to matters such as punctuality and the application of effort, and higher-order creative approaches to problem-solving.

Finally, the preparatory role of initial education and training should be assessed in relation to the possibilities for further learning and re-learning throughout the life cycle. The economic benefits of that initial education risk being eroded or lost if they are not then followed up by widespread opportunities for adults to learn.

Organisational Differences but Substantial Similarity of Problems

OECD countries differ significantly in the organisation of their school systems in terms of pupil selection at the lower secondary level, the degree of diversity of provision and choice, and the role of private schooling, the timing of subject specialisation, and the degree to which pupils, particularly at the lower secondary level, pursue a common core curriculum or else are placed early in different tracks[3]. There are substantial differences between countries, too, in the importance attached to the threshold marked by the end of compulsory education and the beginning of post-obligatory studies or training; in some systems, as in North America, there is substantial continuity of the high school beyond the end of compulsory schooling, whereas in certain others, the divide between lower and upper secondary is a very clear one. Despite these differences, most countries share the experience of a changing relationship between the lower and upper secondary levels as more youngsters proceed from the former to the latter. It is worth considering the basis on which major organisational differences have been established, including that between comprehensive and selective secondary systems, and the degree to which they continue to reflect changing educational, social, and economic priorities.

Important though these organisational differences might be, there are powerful forces, as well as outstanding issues and questions, that cut across such institutional variations. As concluded in a report to the OECD Education Ministers[4]:

> "It might be inferred that a sharp polarisation exists between countries that have opted to retain selection and those that have opted for the common school. In fact, the crux is how much differentiation occurs within individual schools and when it begins. In practice, common schools vary considerably in the way they distribute pupils in classes and groups and apply the curriculum. The failure and low achievement problem remain largely unsolved regardless of the school model that has been adopted" (p. 66).

A major question is thus highlighted: How to devise a curriculum that is relevant to all the pupils in school and how, in particular, to meet the universal problems of failure and under-achievement?

Revising the Curriculum: Towards a Core for All?

With the high and rising minimum threshold of knowledge and competence that is demanded by modern economies, there is clearly need for profound scrutiny of the present school curriculum and whether and how it can be organised so that all youngsters have access to it without sacrificing either the development of the quicker and more gifted or losing the less academic through boredom and lack of motivation. There is agreement in many circles that the content and the organisation of the traditional school curriculum are in need of change — perhaps quite profound change. But there the agreement tends to stop.

It is not hard to agree that specialisation in school should not take place prematurely, meaning that no one is directed into "dead-end" options that lead nowhere, either educationally or professionally. But this is still a big step from agreeing

on a core curriculum that all should learn, and precisely what form it should take. The interest of the low-achievers, many of whom would previously have left education altogether, may well not be held by an overly academic diet that does not have any clear vocational relevance. But at the same time, the criticism is often made, and again most particularly in the North American debate on quality in schooling, that the high school curriculum has become too cluttered and diversified into areas that distract from the established school subjects. Indeed, whatever the direction for curriculum change — whether towards greater emphasis on the explicitly vocational and knowledge of the labour market or on traditional school subjects — there is the risk that the curriculum will become overloaded and potentially incoherent if more and more is added to it. *Expecting young people to have a higher level of understanding and a greater mastery of knowledge and skills is not tantamount to simply expanding the elements of the curriculum.* Some countries, e.g. Finland, have actually reduced the elements of the curriculum at the lower secondary level in the face of the "explosion of knowledge".

An obvious pitfall involved in establishing "minimum thresholds" and "basics" is that they risk becoming *average* standards rather than the intended notion of *minima* that all, or nearly all, should actually surpass. A frequent, and often justified, criticism of schools is that they set expectations for pupils too low, especially for those whose present attainment is poor. Although this may in part be the responsibility of individual teachers, it is more generally ingrained in the system from the outset — the self-fulfilling prophecy of failure engendering failure. The terminology of "basics" confronts two equally present dangers. One is that the modern world requires command of *complex* knowledge and skills and the ability to adopt *creative* approaches to solving new problems, that sit uneasily with the language of "basics". Second, few would deny that any *specific* knowledge and skills of vocational relevance learned in initial education are subject now to dauntingly rapid obsolescence, putting the premium on *general* mastery of that change and learning anew. Thus, the very concept of the "basics" comes up for redefinition.

In terms of contents, two areas recur in proposals for making the curriculum more suited to the requirements of the modern economy: *the need for more adequate introduction to jobs, careers, and the world of work in schools* and *familiarisation with and command of information technologies* (see following two sections). Defining the curriculum extends well beyond specifying contents, however, and essentially includes how it should be taught and what the most appropriate settings for student learning of any redefined curriculum should be. What is the rightful role and place of schools and classrooms and that of other settings? Even assuming that all should master the same core of learning, can this be done in the same way for everyone, and at the same time?[5]

The general policy questions these raise are perplexing and admit of no single response: should a revitalised common curriculum be sustained and, if so, how organised and how related to the diverse interests of students and the requirements of specialised preparation for employment? If, instead, differentiation should begin earlier than is often common at present — at 14 or 15 years — can the risks of overspecialisation be avoided, including obsolescence of knowledge, and can flexibility and transferability of skills be maintained? And how far can the ideal of access to a common, shared culture remain the guiding principle for schools or are social and economic disparities so wide as to make this unattainable? The latter consideration is

of special concern in those countries that have adopted fully–fledged comprehensive systems with the aim of equality of educational opportunity paramount. They face a difficult dilemma if they seek to develop more individualised packages of learning suited to the interests and talents of different groups of students, particularly those whose present levels of success are lowest, since in so doing they risk reintroducing the very differentiation that comprehensive schools initially promised to reduce or eradicate.

Making Schooling More "Relevant"

"Relevance" is an elusive concept. Particularly since the onset of the recession and the youth employment crisis in the 1970s, education authorities in many countries have arguably moved further in the direction of making curricula and qualifications more relevant to real–world labour market needs than they have in any previous period of comparable length. Yet, one of the most frequent causes of complaint among young people about their education is precisely that it lacks "relevance"[6]. Exactly how that concept should be translated into practice, especially in the face of rapid structural change, is far from clear. It must be recognised that a strict interface between education and manpower needs is neither possible nor desirable because of the roles which education must play in developing a responsible and self–fulfilling citizen in a democratic society. The challenge can be posed to the education system in terms of finding the proverbial "golden mean" — i.e. neither over–responding nor under–responding to labour market and economic needs.

Specifying where the line of the "golden mean" should be drawn will involve attention to social skills and attitudinal development no less than to specific knowledge about professional fields. A wide–ranging survey of a number of OECD countries has recently argued that the former are frequently a priority for many employers who value behavioural characteristics as highly as they do the cognitive outcomes of schooling.

Greater "relevance" may well also involve the development of active exchange between schools and local enterprises and employers. It will almost certainly necessitate genuine careers education and advice for all, that is given proper standing alongside the other purposes of schooling.

No serious reforms can be envisaged that do not closely involve *the teaching force*. Time and again, the success of educational initiatives have been found to be crucially dependent on the nature and quality of the teachers. Yet, in most countries new recruitment to the teaching corps has been significantly reduced, so that changes must be implemented, for the most part, with those already in the (now ageing) profession. Fortunately, the common stereotype of the classroom pedagogue far removed from the worlds of industry and commerce, and even disdainful of them, is becoming increasingly rare. In many countries, there is now policy emphasis on the need for teachers to possess knowledge about, and interest in, the job market and the economy. Yet, for that interest and experience to be nurtured and maintained requires active contact and exchanges with the world of work and hence this should be developed as one aspect of in–service training. In some countries, serious attention is being given to the recruitment of teachers with different backgrounds, who have already followed another professional career. A significant limitation to this development in a number of countries is likely to be the low relative levels of material rewards that teachers receive and their declining social status.

The common stance of criticising teachers for their isolation from the economy is likely to prove an inadequate basis for effecting change; their active co–operation is integral to curriculum reform. Moreover, teachers are placed under increasing stress — through such factors as increased student retention rates, extended curricula in primary and secondary schools, the provision of programmes across the whole spectrum of pupils and students, and the need to develop stronger links with the community and business. *What used to be expected of the exceptional teacher has now become the norm.* They will need active support in finding the "golden mean" referred to above.

Information Technology: The New "Basic" in the Curriculum?

As information technologies have become an integral part of modern life, their introduction into the education systems of OECD countries has followed a variety of patterns. A Centre for Educational Research and Innovation (CERI) report has categorised these as the "vocational" approach (where ITs are introduced primarily as a response to the need for specialised manpower), the "comprehensive" approach (where informatics is regarded as part of general education for all), the "equipment" approach (priority given to investment in equipment as a variant of the "vocational" approach), and the "curriculum" approach (predominated by purely educational concerns, especially curriculum development for ITs)[7]. Some common trends may, however, be discernible; for instance, vocational and professional education in IT, instead of being limited largely to future computer scientists, is being extended to a much broader range of students/trainees whose jobs will be affected by these technologies. In some countries, where the teaching of "informatics" was previously limited to upper secondary education as a special subject, it has been extended downwards to lower secondary and primary education with more emphasis on how ITs function and their role in society. Many countries also continue to face more pressing problems of teacher training for their use, and software development, than they do of shortage of equipment.

The questions thus arise of *how well education systems up to the present have adapted to new technologies and what their place in the curriculum, in both primary and secondary schools, should be.* In fact, it could be argued that the more information technologies are integrated into education as the pedagogical instrument for teaching and learning, as is already happening in some exemplary schools and systems, then the less need there will be for a special place in the curriculum for "informatics" and computer studies. Whether computer studies will actually become the main addition in redefined curricula around "new basics" remains, therefore, an open question. Another open question is the degree to which information technologies will help develop the higher–order thinking skills — the ability to analyse, synthesize, and solve problems — as some claim. It may be that the steps and processes used in advanced information analysis will become more widely adopted by pupils and students for their own solving of complex problems. The opposite scenario is not impossible either, however, in that the availability of technologies to perform routine tasks that before involved elaborate mental exercises may encourage some mechanical ability rather than enhanced understanding.

The Organisation of the Post-compulsory Sector: Clearing Pathways through the "Jungle" of Provision

As mentioned above, the boundaries of what might be termed "initial education" have been increasingly pushed back and preparation for working life now extends well beyond compulsory schooling in many OECD countries to embrace a wide variety of education and training programmes, many outside the formal system. In several European countries, such as Belgium, Germany, and the Netherlands, there is required attendance in education or training, on at least a part-time basis, up to the age of 18. *De facto*, in a number of others, participation beyond the legal minimum age is socially, if not legally, required so that the "drop-out problem" in these has taken on a new meaning as it refers to students of an age who are perfectly entitled to leave education or training if they wish. Approximately three-quarters or more of 17 year-olds are enrolled, either on a full- or part-time basis, in Austria, Belgium, Canada, Denmark, Germany, Japan, the Netherlands, Norway, Switzerland and the United States; and certain other countries would no doubt show similar figures if all labour market and training programmes were included[8]. The pressures on young people to remain in education or training may well be firm also where the policy of a "youth guarantee" (of work, education or training) is in place.

The actual structures and institutional arrangements within which this extended initial preparation for employment is conducted varies much from country to country[9]. In some, the majority or near-totality of the age group are provided for by a single, comprehensive type of institution, such as an upper secondary school or college; this is the case in North America, Japan, Sweden and Yugoslavia, although in the United States the essential choice point comes at the end of secondary, rather than compulsory, education. In certain other countries, the majority of young people enter apprenticeships, which involve both on-the-job training and part-time education, at this stage; this is the situation in, for example, Germany and Switzerland. In other countries still, such as France, Italy, the Netherlands and the United Kingdom, there is a more mixed or pluralistic pattern, which involves schools, colleges, apprenticeships, training schemes and other special programmes, often for the groups "at risk". The resolution of issues confronting policy-makers at the post-compulsory level are clearly influenced by which is the dominant institutional model in place.

Concerning the formal provisions of education and training, some countries are blurring the boundaries between lower and upper secondary education while others maintain a clear divide between the two as, for example, in Sweden, where the aim is that the selective role of compulsory schooling be minimised. Here, therefore, is a major source of difference between Member countries: how far are the roles and functions of compulsory schooling and post-compulsory education and training regarded as clearly distinct and to what degree should the former be concerned with general preparation for life and *about* work, and the latter with direct preparation *for* work (as well, of course, as concern with other functions such as preparation for further study)? It should be noted too that there are respects in which *post-secondary* education could be included in discussion of initial preparation for employment in that this is a major role it performs. There are some countries where further and higher education is the common experience for the majority of the relevant age group, and

there is some blurring of boundaries with post-compulsory provision. (It can be noted in addition that certain of the programmes available at the post-secondary level, in the North American systems in particular, are mainly provided at the post-compulsory or upper secondary level elsewhere.)

In many OECD countries, especially in response to very high levels of youth unemployment, there has been a shift towards the *expansion of vocational education and training schemes* particularly because of a flourishing of programmes outside the formal sector, while within the post-compulsory education and training systems, the dominant trend in most has remained increased participation in traditional, often full-time, programmes.

As the array of post-compulsory opportunities has grown in size and complexity, there has emerged the very real problem of confusion both for students, parents, and employers, on the one hand, and for the controlling authorities, on the other. In the absence of a clear framework, the variety of provisions that has developed precisely in order to meet the specific needs of individuals, groups, employers and labour markets, risks being ill understood by all. It has been described as a "jungle". For the student and trainee, in particular, there is obvious potential here for new technologies to be applied in extensive and innovative ways to help clear paths through the undergrowth of that jungle by providing information rapidly and clearly. Organisation and control of courses and programmes may be no less problematic as diversity develops. While education authorities in many countries will continue to have the major responsibilities for the education and training of the young at the upper secondary level, they are increasingly entering partnership arrangements with other public and private bodies, sometimes as bidders and on a contractual basis. Actual arrangements vary considerably across countries, but one policy question that crosses frontiers is how to allow innovations to flourish while providing safeguards and preventing bewildering confusion. Nevertheless, there will be real limits to the scope for education and training agencies to establish clarity above the confusion in a situation where rapidly changing labour market opportunities, and the concomitant impact on students' choices, constantly alter the attractiveness of different courses, qualifications, and institutions.

Ensuring that Qualifications are Signposts to Knowledge and Skills

Qualifications play the inescapable and essential role of providing a publicly-recognised face to the largely hidden world of the school, workshop, or college[10]. Where there is confusion about education and training as described above, it is largely about the existence or meaning of different qualifications. Especially with the limited job opportunities available for young people, both they and employers need qualifications that demonstrate genuine mastery of subject matter, that are understood by all concerned, and that are comparable one with another. They are, so to speak, the "currency of the market." In most countries, it is the education authorities who enjoy a monopoly over the award of *nationally* recognised qualifications, and their role can be the crucial one of acting as "gatekeepers" of quality. Yet, as the sources of provision of education and training grow, especially in the non-formal sector, a very real problem may develop of a widening difference between specific credentials, with value in *local* and *regional* labour markets, and nationally-recognised qualifications. Indeed, in their striving for national recognition, it is possible that innovative, perhaps

non–formal, programmes will be drawn into bureaucratic and inflexible structures through the need to prove comparability with nationally–established courses and diplomas. With growing diversity and complexity, therefore, there is the need for close attention to be given to *appropriate accreditation and recognition of all courses, old and new, and what the relations between them should be.*

The negative effects of credentials are, nevertheless, very real and have been analysed extensively[11]. Qualifications are subject to the powerful distorting effects of selection and credentialling whereby courses and programmes are attractive to the student more for the socio–economic rewards they promise than necessarily the competence these impart; this applies particularly when job opportunities are scarce. Those who feel the effects of these social mechanisms most sharply are young people with few or no recognised qualifications, but, over time, the thresholds of minimum requirements have continued to rise, affecting the better–qualified even where there is no proven link between higher–level credentials and better performance on the job. Education and training agencies may well find themselves relatively powerless to divert such powerful social dynamics. What they can do is to ensure, as far as possible, that the qualifications they impart provide genuine and understood indications of what successful completion of the programme has taught. And the emphasis should be precisely on assessment of what youngsters know and can do, rather than of what they do *not*, as has traditionally been the case with many school examinations.

The Changing Nature and Balance of Programmes after Compulsory Education

Familiar distinctions, such as between "general", "technical", and "vocational" programmes, or between "education" and "training", seem increasingly inadequate to capture the richness of current provision, and the very meaning and content of "general" or "vocational" varies widely both within and between countries. It is thus extremely difficult, and potentially misleading, to find common trends concerning the development of the different programmes and branches and their balance in OECD countries. For example, "general" is a term that carries an extremely wide range of meaning from the most prestigious and academic through to remedial courses, that come lowest in the post–compulsory pecking order of programmes.

It is even more difficult to generalise about *"vocational" education and training.* Overall, it might be said that with the growth of numbers in vocational education and training there have been serious efforts in several countries to upgrade parts of it and, in some, to alter the balance towards technical lines that lead to high–quality, middle–level qualifications. There has certainly been a tendency for a growing differentiation of the vocational sector — students in it now display very differing aptitudes, some programmes give a much clearer employment advantage than others, and certain of them are clearly alternatives to unemployment in contrast to others that require advanced scientific and technical knowledge.

Yet, such global trends cover highly complex and diverse developments *within* programmes and this applies with special force to the balance of the "general" and "specific" in vocational programmes. The emphasis on broad–based courses, occupational training families, generic skills, and general education which one finds in some countries or sectors contrasts with the adherence to more traditional, specific patterns of training in others, notably in those with strong apprenticeship systems. On the face of it, the latter would seem to be dysfunctional in an unpredictable labour

market. The evidence, however, seems to be that they continue to function well, and this may be for several reasons. First, they provide the solid basis in certain skills which are the prerequisite of any transfer. Second, the skills they include are to some extent inherently transferable: after all, many jobs involve work with machines, money, people or information. Third, they provide a generic training in the disciplines of work: time-keeping, planning, searching, checking, co-operation with others, quality control, and so forth. Although they may be relatively specific in terms of work *content*, they are generic in terms of work *process*. By contrast, the broad-based courses may give a wider basis in content, but perhaps a less thorough training in the disciplines and processes of work.

Alongside the questions raised above about the nature of particular courses and programmes — the balance of contents and processes that constitute them — are those of the appropriate balance among the different branches and learning settings that make up the extended education and training systems of OECD countries. Should the existing patterns of "general", "technical" and "vocational" streams, between full-time and part-time study, and between formal and non-formal programmes, be maintained? How can one meet the limitations imposed by the fact that not all programmes carry the same prestige or the same value in preparation for employment and that not everyone can have access to those courses that are most sought after or useful. The differential prestige of courses has a more general importance in that it is likely that the overall scope for the reform of post-compulsory education and training, including higher education, will be chequered so long as the academic upper secondary branches exercise such a powerful influence over student choices and the other types of provision, and so long as they are resistant to outside influence. Even if the traditional institutional resistance to change can be overcome, it still has to be decided in what configuration should the main functions of post-compulsory education and training be combined (preparing students for further occupational training, for direct entry to the labour market, or, as traditionally, for post-secondary education) recognising the limits of planning in this stage of provision, influenced as it is by labour market opportunities and signals.

The Disadvantaged and Special Needs

A recurrent issue and problem throughout all the above discussion has been the particular difficulties encountered by those who are least advantaged and qualified, for whom education as much threatens to select them *out* of the running for a firm foothold in the labour market through lack of qualifications as it does to integrate them *in* through the acquisition of marketable skills. The problems of the least qualified do not, of course, make their appearance suddenly at the point of transition from education to adult life; often they have been evident from the very earliest years of schooling. Combatting low educational achievement and the inevitable risks of poor employment chances or chronic unemployment thus requires concerted policies from the onset of schooling, involving new approaches and pedagogical practices, and the full involvement of the local community. But the effectiveness of such strategies and approaches are likely to be significantly reduced if they are not supported by policies that allow further education and training through the life cycle, starting with "second-chance" opportunities for secondary-level qualifications in the post-compulsory sector, and continuing with provision for professional training and retraining.

The perspective of "disadvantage" might not always be an appropriate one, however, for everyone with special needs or claims. Though some progress has been evident over recent years in terms of access to non-traditional fields of study and training, the special position of *girls and young women* has become the subject of major concern in many countries. Despite the fact that females now frequently out-perform males in school, girls and women remain seriously under-represented in those scientific and technical fields that have become sought after for good jobs, and the labour market itself remains strikingly segregated by gender[12]. There is growing concern that current structural and technological change will sweep away the progress that women have made over recent years in the job market. Education and training, in tandem with labour market policies, clearly have a major responsibility to ensure that the learning opportunities, and the consequent employment and life chances, of women come on to a more equitable footing with those of men.

People with physical and mental *disabilities* represent another section of the population (though one covering a very wide range of conditions) that have managed to become heard over recent years, when before they were seriously neglected. The main trend in school policies in many OECD countries has been to integrate or "mainstream" the handicapped into ordinary classrooms, thereby attempting to minimise the stigma and isolation of their disability. It will be important to ensure that the more integration policies are successful, the more intensive will be the efforts to keep step in terms of access to the job market so that the point of entry into adult life is not a sudden return to marginal status[13].

Though the actual problems and situation of *immigrant* youngsters are very different from those with learning difficulties, the terms with which their situation can be described are very similar, as concluded in a recent CERI report on the educational fortunes of this section of OECD societies[14]:

> "It is clear that exclusion from the education system constitutes the first stage in a process of marginalisation, culminating in exclusion from the system of production and — since social integration depends on integration within the labour force — in exclusion from society itself. The fact of having left school early, very often without obtaining any diploma, and of having acquired no adequate initial training, can lead only to an unfavourable position on the labour market, whether in terms of types of employment accessible, of conditions of work, or of vulnerability to unemployment. This relation is likely to create handicaps in any case, but all the more so for those whose best chance of social integration resides in access to the most highly qualified employment available." (p.35).

Whatever the new special needs that have emerged, however, the traditional sources of socio-economic and educational disadvantage are still, perhaps, the most critical; indeed they are felt with more force as unemployment and segmentation have become quasi-permanent realities of modern economies. This raises extremely awkward dilemmas between, on the one hand, the urgency to target programmes on those who need them most and the risk, on the other, that such education and training then becomes stigmatised with the label of being suited only for those "left aside". In other words, designating some programmes for "low achievers" or "the bottom 40 per cent" segregates the students into categories and implies rank orders. No matter how well the student performs in the new programme, he or she will be categorised by having attempted it, and in the competition for scarce jobs, the label will defeat the

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programme's purposes. How do Member countries meet these profound, almost intractable problems?

CONCLUSIONS

The role played by initial education and training in OECD countries is crucial for the successful performance of their economies and, in broader terms, their full functioning as democratic societies. It is in the early years of each citizen's life that the main base, both of knowledge and skills, and of attitudes and values, are laid. Societal expectations of this initial preparation for active life are, therefore, higher now than ever before. But here the possibility should be confronted that these expectations, if not too high, have now become excessively diverse — that education and training systems are now pushed to engage in so many, diverse tasks that they carry the risk of detracting from the successful accomplishment of the main aims of teaching and learning that it is their special duty to perform.

While expectations, indeed optimism, have revived in many quarters towards education's inescapable economic and social contribution, these should recognise the full complexity of education/economy relationships. The importance of qualitative, not just quantitative, change and investment in human resources, renders inadequate easy formulas for improving the attainment of economic goals through education. Education and training enhance economic performance in ways that go well beyond the transmission of knowledge and skills and include the teaching and learning of diffuse, if very real, outcomes such as attitudes to innovation, co-operation and productivity, and the value placed on different occupations and economic activities. "Education" is not simply synonymous with schooling (where the responsibility for improvement lies predominantly with the relevant education authorities), but takes place in many settings, including the workplace, under diverse responsibilities. And there is a clear need to assess initial education and training in the larger context of recurrent provision for adults if the benefits of the former are not to be eroded or lost.

It is useful to divide the questions and issues covered here into two groups — those confronting *initial schooling*, on the one hand, and the longer, more drawn-out process of *preparation for employment and active life*, involving a highly diversified, complex array of programmes and provisions extending up to higher education, on the other.

Initial schooling has come in for frequent criticism for a variety of shortcomings, ranging from isolation from economic life and inflexibility in the face of rapid change to inadequate preparation in the basic knowledge and skills of the traditional curriculum. Given that the calls on schools have become so diverse, and many clienteles who traditionally lay outside the decision-making process, including employers, now have a growing voice in educational policy, a broad-ranging stocktaking would be very useful across OECD countries. Such a society-wide reappraisal of goals, standards and methods would certainly recognise the importance of economic goals. Yet these would need to be placed in the context of the wider task of educating today's youth for informed democratic citizenry and adult life. This breadth of vision is especially needed in a world subject now to change of unprecedented rapidity. Equally, flexibility and responsiveness in education should not be interpreted as the negation of its missions — such as the promotion of individual

growth — that are constant. Particularly where schooling is concerned, it could easily be forgotten that the very real potential to contribute to economic well-being will often be realised in the long term, rather than be immediately apparent.

To propose that all should now attain a high minimum threshold of competence leaves it still to be specified exactly what the essential core of learning is that all should have access to. School curricula are open to criticism, not least by young people themselves, of being insufficiently "relevant". Given the need to clarify the contribution of schooling to economies and societies, how should "relevance" be interpreted and is enough done to ensure that teachers are knowledgeable about the world of work so that they can impart a good understanding of it to the pupils and students in their charge? Specific issues need to be addressed such as the proper place and contents of economic education, entrepreneurship and innovation, and non-traditional, experiential learning in the school curriculum.

As more young people remain in education and training, the very meaning of "youth" and "transition" to adulthood has been transformed. Member countries differ very widely, however, in their institutional arrangements as well as in the goals and tasks they expect of the different parts of these systems so that there is no single route to improvement that all can follow. Nevertheless, all countries can scrutinize their existing arrangements in terms of such considerations as the appropriate balance of general and specific elements within programmes and whether the existing divisions of the main general, technical and vocational branches, of full-time and part-time study, of formal and non-formal provision, are the optimal ones. All countries can also pay close attention to the quality of the teaching and training staff in these different programmes. Flexibility of provision should not be enhanced so far as to lead to a decline in the quality of the teaching staff.

Substantial differences of student interests and talents must now be accommodated. A wide variety of administrations and bodies, increasingly drawn from outside the formal education and training sectors, are implicated, raising sharply the issue of coherence among them and the degree to which dialogue between the different partners and providers is a regular feature of the policy process. At present, there is often excessive confusion by parents, employers, and young people themselves, about the "jungle" of pathways and provisions leading to adulthood and this should be confronted and alleviated. Partly, this could be achieved through the better distribution of information that fully exploits modern communications technologies; partly, it requires close attention to qualifications and their reflection of recognised, useful competences, which in turn suggests that they should be regularly scrutinized and updated by all relevant bodies and partners. How is this achieved in Member countries? And there remain to be tackled the long-standing differences of prestige and employment value between the different branches and educational programmes that risk to distort reforms aiming at greater flexibility and innovation. Can this be done without sacrifice of excellence or digression to the average for the most highly gifted? A general conclusion is that the achievement levels of all should be raised.

Ensuring that the positive aspects of education's *productive* and *distributive* functions are enhanced, and the negative aspects reduced, is a fundamental consideration for education and training policies at these levels. Neither function can be neglected. Human resource development emphasizes the former by addressing the centrality of the "human factor", and hence its nurture through education and

training, to employment, structural and technological change, and to such goals as enhanced productivity and flexibility. But education and training, particularly through the mechanisms of the qualifications and credentials they impart, also act as powerful agents of selection in the distribution of economic and social rewards. The role of initial education in preparing all young people for active life is vitally concerned with both — how to give all the knowledge, skills and competences that are needed in the contemporary world and contribute to a healthy economy, and how to ensure that certain youngsters are not "left aside" through lack of appropriate skills and qualifications.

NOTES AND REFERENCES

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2. See J. Coleman and T. Husén (1985), *Becoming Adult in a Changing Society*, OECD/CERI, Paris.
3. See OECD (1983), *Compulsory Schooling in a Changing World*, Paris, and OECD (1987), *Adolescents and Comprehensive Schooling*, Paris.
4. OECD (1985), *Education in Modern Society*, Paris.
5. See Malcolm Skilbeck, Kirsten Tate and Nicholas Lowe (forthcoming) *Core Skills and the Curriculum*, OECD, Paris.
6. OECD/CERI (1983), *Education and Work: The Views of the Young*, Paris.
7. OECD/CERI (1986), *New Information Technologies: A Challenge for Education*, Paris. See also OECD/CERI (1987), *Information Technologies and Basic Learning*, Paris.
8. OECD (1988), "Education in OECD Countries 1984". Document for general distribution.
9. For a full discussion of institutional differences between OECD countries, see OECD (1985), *Education and Training After Basic Schooling*, Paris.
10. The following sections draw heavily on the recent synthesis of country case studies on the content of studies after compulsory schooling, OECD (1988), *Pathways for Learning: Education and Training from 16 to 19*, Paris.
11. For example, R. Dore (1976), *The Diploma Disease: Education, Qualification, and Development*. Allen and Unwin; and OECD (1977), *Selection and Certification in Education and Employment*, Paris.
12. OECD (1986), *Girls and Women in Education. A Cross-national Study of Sex Inequalities in Upbringing and in Schools and Colleges*, Paris, Chapter 1.
13. Amply discussed in the High-Level CERI Conference On Active Life for Handicapped Youth, in December 1986.
16. OECD/CERI (1987), *Immigrants' Children at School*, Paris.

III

THE FURTHER EDUCATION AND TRAINING OF ADULTS

Adult education and training have today become a major issue of public concern. There are many reasons for this renewed interest in organised opportunities for adult learning, most of which seem to relate to ongoing technological and structural change in the economy and to changing demographic conditions in Member countries, as analysed in the Secretary-General's report on structural adjustment[1].

First, it is increasingly recognised that the potential benefits of technological innovation can be fully realised only if such innovation is prepared and accompanied by integrated strategies of organisational change and appropriate skill formation[2].

Second, continuous and intense structural change, and in particular the shift of employment towards the service sector, requires many adult workers to change jobs and occupations and in many cases to learn completely new trades. This pressure for adaptation and reconversion will, if anything, increase during the coming decade[3].

Third, demographic changes are leading to the rapid ageing of the labour force in all Member countries. It will no longer be possible to rely primarily on well-qualified young labour market entrants as the principal source for innovation and adaptation. This demographic evolution reinforces the need for continuous upskilling and frequent reconversion among adult workers.

Finally, rationalisation and structural change carry high social and economic costs, especially insofar as they tend to produce high rates of long-term unemployment among older and low-skilled workers[4]. Such costs could probably be reduced through more preventive and more integrated strategies of innovation and human resources management, including substantial investment in the education and training of workers threatened by unemployment, either with a view to new jobs inside their enterprise or in response to labour demand in local and regional labour markets.

Beyond these concerns, which relate directly to technological, structural and demographic developments affecting the world of work, Member countries are also experiencing profound social changes which have important implications for the learning needs of adults, in terms of their individual development and their behaviour as family members, consumers and citizens, all of which have significant economic implications as well.

Agreement about the growing importance of education, training and skill formation among adults exists in these general terms. However, many open questions remain as to the respective roles and responsibilities of employers, governments and

individual workers themselves with respect to the organisation and financing of formal and informal processes of learning in the light of the particular needs and possibilities of different groups of persons and enterprises[5].

THE GROWING IMPORTANCE OF ENTERPRISE-BASED TRAINING FOR ADULTS WORKERS

The Shifting Dynamics of Skill Formation: From Educational Institutions Towards the Enterprise

Several developments have in recent years contributed to shift the dynamics of skill formation of both young people and adults away from traditional educational institutions towards the enterprise[6]. Increasing uncertainty about future economic developments has reduced the reliance on manpower planning strategies at the macro-economic level, and formal vocational education is seen to respond only imperfectly to the rapid change and diversification in work patterns and work content. New jobs and related new skill profiles emerge as a result of increasingly integrated processes of work and learning, and economic effectiveness tends to depend less on detailed planning and prescription than on the motivation and inventiveness of individual workers and work teams at the micro level of the enterprise and the workplace.

Many enterprises, and especially those operating at the frontiers of technological innovation and in highly competitive markets, are beginning to recognise the importance of the "human factor" and to develop both formal education and training and informal opportunities for the continuing skill development of adult workers. Depending on national education systems and traditions, such enterprise strategies involve also the recourse to external training programmes, provided either by public institutions or by private training firms[7].

However, not all enterprises are equally engaged in the skill development of their workers. Strong differences are observed according to size of enterprise, sector of activity, regional economic conditions, and national traditions of enterprise-based training.

Large enterprises, especially in developing sectors of economic activity, are the main providers of internal education and training for adult workers. However, their training efforts are often biased towards management staff and other highly-skilled personnel, while less-skilled workers often receive only short-term adaptation training in case of technological or organisational changes affecting their workplace[8]. In addition, female workers face serious difficulties with work-related training, due to both family obligations and their unfavourable position in occupational hierarchies.

In all countries special problems exist in relation to skill formation in declining economic sectors and in small and medium-sized enterprises.

Skill Formation in Declining Economic Sectors and in Small and Medium-sized Enterprises (SMEs)

In declining sectors of activity, the need for retraining is generally recognised by the social partners and by governments. In most countries programmes are developed

on a local or regional basis, linking educational and training programmes with other regional development strategies. However, such programmes preparing displaced workers for new or other available jobs can generally serve only a small proportion of the population concerned and, again, concentrate on the most qualified persons, while the less qualified are at best provided with different kinds of "social measures", including varying types of "labour market training"[9].

One important policy issue for the near future relates therefore to efficient strategies of preventive upskilling and retraining for those threatened by displacement, including training, counselling and orientation measures intervening before workers are actually laid off. Such forward-looking strategies can be envisaged only on the basis of negotiated agreements between the social partners, which should be encouraged and facilitated by governments and supported by all existing training providers, be they individual enterprises, Chambers of Industry and Commerce, unions, joint training agencies or public institutions.

As to skill formation in small and medium-sized firms, recent research in this field suggests a much more differentiated picture than the one generally associated with such enterprises. SMEs providing themselves formal training for their adult workers on a continuous basis are indeed rare. However, those involved in capital-intensive and/or high value-added activities provide at least their skilled and highly-skilled workers with important learning opportunities in external courses and through more integrated types of work organisation. This last feature can also be observed in SMEs with high proportions of lower-skilled workers, which points to the fact that SMEs in general may provide considerable opportunities of non-formalised skill development even if it can neither be measured in terms of training hours nor be clearly evaluated in terms of results[8].

Nevertheless, there exists in all countries a strong concern for broader and more systematic provision of education and training for adult workers in SMEs. Solutions are generally sought in three directions: closer links between SMEs and public institutions of secondary and higher education (Canada, the United States); joint programmes between large and smaller enterprises (especially in the case of sub-contracting) (Sweden); inter-enterprise training centres established at local and/or sectoral levels through professional organisations such as Chambers of Industry and Commerce (Germany). An important question is, of course, how public policies can encourage and facilitate such developments.

THE LIMITS OF ENTERPRISE-BASED EDUCATION AND TRAINING

Changes in the Functioning of Labour Markets and Their Possible Implications for Skill Formation Among Adult Workers

In spite of the growing involvement of enterprises in adult workers' training in recent years, contradictory developments are currently under way, as between those favouring enterprise-based skill formation and those weakening the readiness and capacity of enterprises to invest in the skills of their workers. The "Japanese model" of strong internal labour markets, linking long-term employment contracts with integrated strategies of work organisation, skill formation and career management, is still being widely advocated as the most promising response to technological innovation

and increasing international competition. At the same time, one observes in all countries a trend, especially among larger companies, both private and public, to externalise a growing range of functions requiring special new expertise not available within the enterprise or which can be assumed at lower cost by new enterprises that are not submitted to the constraints of negotiated agreements on classification systems, remuneration and employment security. The recent proliferation of SMEs, especially in the service sector, reflects at least partly a transfer of employment from large to smaller enterprises, accompanied by a growing diversification and destabilisation of employment patterns[3]. The proportion of durable or even lifetime employment is reduced as new recruitment comprises more fixed-term contracts and different forms of temporary employment. In addition, recourse to part-time work is increasing and arrangements for flexible working hours are becoming more frequent, both in large companies and in SMEs.

Such diversification and destabilisation seem no longer to concern only low-skilled workers in secondary labour markets, but increasingly also highly-skilled experts who work on a temporary or short-term basis for different enterprises (10). While such developments may have partly positive consequences both for the workers concerned (income maximisation) and for enterprises (increased flexibility), they do raise serious questions about the prospects of enterprise-based education and training for a growing proportion of voluntary or involuntary mobile workers, both skilled and unskilled. Alternative provisions for skill development, *geared to individuals rather than to enterprises*, may therefore have to be further developed in the future as a complement to enterprise-based training.

Training Needs Outside Enterprises

In addition to the demand for training among the growing number of such mobile workers in Member countries, strong training needs exist among all those who for one reason or another have no access to enterprise-based education and training. They include not only the registered unemployed, but also many women re-entering the labour market as well as the self-employed, for instance in the growing sector of personal services (recreational services, tourism, care for the elderly, etc.).

Many of these persons have received relatively little initial education and training or were originally trained in presently declining occupations, mainly in manufacturing trades. They often need remedial general education as well as appropriate advice and orientation as to promising future activities and related skills. In addition, these persons often need learning environments where they can improve their self-confidence, communication skills and other social competences which are generally developed through work experience and work-related training in enterprises. Local employment initiatives and various interest groups and training organisations have in recent years strived to develop such programmes. However, they tend to be organised on an *ad hoc* basis, can serve only limited numbers of participants and do not always succeed in providing both general education and encouragement as well as specific skills and concrete support for finding or creating a stable new job. The question therefore arises in which institutional frameworks appropriate programmes can be developed, offering sufficient numbers of training places on a continuous basis.

Finally, there seems to exist in all Member countries relatively optimistic views as to the perspectives for self-employment and the creation of small enterprises by

unemployed persons and other adults wishing to enter or re-enter gainful work. Again, it must be asked where the necessary advice and training in entrepreneurial skills can be provided and how they can be linked to other policies creating favourable conditions for self-employment and the development of small enterprises.

Thus, while the expansion of enterprise-based and work-related education, training and informal skill development (including specific external training financed by enterprises) has undoubtedly been a major factor in the adjustment of Member countries' economies to recent technological and structural change, the weakness or absence of alternative and complementary frameworks for continuing education and training raises a number of serious problems. Large groups within the labour force, such as the unemployed, the low-skilled, the poorly educated, and many women, are excluded from substantial work-related training. Furthermore, at least in the longer term, contradictions may also arise between an all too exclusive reliance on enterprise-provided and/or -financed adult education and training, on the one hand, and policies in favour of diversified employment patterns and increasing labour market flexibility, on the other. In addition, broader needs for remedial general education and for the understanding and mastery of social change not directly related to particular enterprise strategies may not be adequately taken into account in enterprise-based education and training.

Member countries may therefore wish to discuss where programmes transcending immediate interests of enterprises can be provided, how they could be organised and financed, and how they should relate to initial education and training on the one hand and, on the other, to learning opportunities that are directly work-related. Finally, it will be necessary to search for more integrated policy approaches, associating the provision of education and training to adults with social and employment policies as well as structural measures in favour of self-employment and the creation and longevity of new (small) enterprises.

THE ROLE OF EXISTING EDUCATIONAL INSTITUTIONS IN ADULT EDUCATION

The Diversity of Traditional Frameworks for Adult Education

Educational opportunities for adults outside the work place are in all Member countries provided by a large variety of institutions and organisations, ranging from public and private schools, colleges and universities to churches, trade unions, employers' associations, broadcasting media, and various non-profit organisations offering learning opportunities to special groups such as migrants, disabled persons or women entering or re-entering the labour market.

Many of these programmes provide specific work-related training in which enrollees participate either on their own account or (and) in the framework of external training provided by their employers. Other courses offer more general education, in terms either of remedial basic education or of broader cultural programmes for self-fulfilment and personal development. However, in many cases, it is not possible to draw clear demarcation lines between vocational and general education in learning programmes for adults, nor is this necessarily desirable from the point of view of either individual workers or employers. Many training needs include both general and

specific components, and at least large enterprises recognise this in providing themselves considerable amounts of general education along with specific job-related adaptation, upskilling or retraining, especially for less skilled employees in service activities.

Important distinctions, from the point of view of trainees, concern access requirements and certification related to different programmes. In most European countries, with the notable exception of Sweden, courses in post-secondary schools and universities remain largely reserved for persons with entrance diplomas for higher education, while a broad range of non-academic and non-degree programmes is offered by different organisations such as those mentioned above. In North America, on the other hand, universities and colleges play a much larger role with respect to adult learners, offering both degree and non-degree studies.

These varying patterns of provision reflect long-standing historical differences between Member countries in average educational attainment and in the selectivity of upper secondary education as well as different concepts and roles of higher education. In Europe, higher education was traditionally provided in research-oriented institutions reserved for selected elites as compared to more open and community-oriented institutions in North America (excepting the relatively limited numbers of old, prestigious colleges and universities such as the Ivy League schools in the United States)[11].

Given these historical differences, future orientations and objectives aiming at the expansion and qualitative adaptation of adult education to changing social and economic conditions will naturally differ between Member countries. Thus, the scope and nature of remedial basic education needed by adults will depend on the nature and performance of initial education systems in Member countries in recent decades, on the share of migrants and other disadvantaged groups who have received little initial education, but also on the speed and intensity of structural change in Member countries' economies, generating more or less occupational disruption on the members of their labour force. Similarly, the nature of initial vocational education and training systems, the dominance of school-based versus enterprise-based preparation for working life will influence requirements for change and expansion in adult education and training, both in terms of institutional arrangements and the content and methods of educational programmes for different groups of adults.

Common Lines of Development Across Member Countries

However, the tendency towards occupational upskilling and the growing importance of abstract reasoning and academic skills which are observed across Member countries in all sectors of activity and in a large number of rapidly changing work situations, suggest certain common lines of development. Thus, an increasing share of adult education will have to be provided at the level of post-secondary studies, challenging traditional barriers of entrance diplomas as well as the scope and levels of available remedial education and refresher courses, regardless of the institutional settings providing such education. Furthermore, all Member countries are presently confronted with the question of how and to what extent education systems can be organised so as to offer open, continuous and integrated learning opportunities, reducing institutional, administrative and legal distinctions and barriers between initial and further education and training, between general and vocational education,

between theoretical and applied knowledge. One common concern in this respect relates in particular to certification as a means of valorising non-degree programmes. This issue concerns both the signalisation of acquired skills to employers and the links between certification, occupational classification and pay systems which will undoubtedly have to be clarified through negotiation between the social partners.

Together with other providers of adult education, traditional institutions of post-secondary and higher education will clearly have to play a crucial role in future systems of adult education. In many countries this will imply the expansion of special programmes designed for different groups of adults, in spite of rising numbers of young people seeking to enter such institutions in the framework of initial general and vocational education. As mentioned above, it will also challenge traditional entrance procedures and increase the pressure in favour of integrated modular systems which would allow for the cumulation of limited course modules, taken just after compulsory education, with courses taken throughout working life, thus leaving the door open for eventually obtaining higher-level certificates and degrees in later years, based on alternating periods of study and employment[12]. Policies redefining access requirements to universities, and moves towards individual entitlements, drawing rights, or loans could favour such more open systems, if curricula were actually reorganised in modular ways and if the right balance could be found between continuity in the teaching of basic knowledge and skills (e.g. those relating to languages and communication, abstract thinking, technological and general culture), on the one hand, and innovation in specialised, vocationally-oriented courses and in programmes relating to social and cultural change, on the other hand. There are probably no generally valid rules or models of how to achieve such objectives, apart from greater trust in decentralisation and the stimulation of initiatives, negotiation and concertation at the grassroots level of institutions and communities. The question is how decentralisation and bottom-line initiatives can be reconciled with a minimum of quality control and sufficient coherence of education programmes: or else, to what extent "self-control" and "self-regulation" could be expected from the functioning of "training markets", including initial as well as further education and training at the post-secondary level.

Finally, the future of adult education and training outside enterprises cannot be envisaged without the massive expansion of teacher and training staff, both through the hiring of additional full-time teachers and through increased teaching and training activities of qualified professionals and skilled workers dedicating their time partly or periodically to adult education both in schools and universities and in other settings. Important questions in this context relate to the responsibilities and capacities of universities and other tertiary institutions with respect to the training and retraining of such teachers and to the status of part-time teachers coming from private industry or different parts of the public service.

Access of Adults to Further Education and Training Outside the Enterprise

Access to further education and training not directly related to work is often limited by the lack of time available for attending courses and for study (a particular problem for women with family responsibilities), by entrance requirements (especially of certified courses at post-secondary and higher education level), and by direct and indirect costs incurred through fees, eventual travelling and accommodation, and, above all, lost income[12].

Several European countries (Sweden, Germany, France, and others) have, since the early 1970s, attempted to solve the time problem by introducing a right to educational leave. This, however, has not substantially increased the participation of adults in further education and training, since problems of entrance requirements and costs to individual participants have remained largely unresolved.

A few countries have also been experimenting in recent years with open access to post-secondary and higher education and/or with the partial substitution of academic entrance requirements by periods of work experience. In addition, distance teaching is being developed in most Member countries[11].

Such developments are desirable even if it must be recognised that they will, again, be most profitable to persons with relatively advanced initial education. In order to have a discernible impact on participation in further education, leading to substantial upskilling and personal development, they presuppose relatively high average levels of educational attainment in the populations concerned. Moreover, experience has shown that both "open universities" and distance learning require considerable support structures providing information, orientation advice, encouragement and, often, preparatory, remedial or refresher courses[11].

THE FUNCTIONING OF TRAINING MARKETS AND THE ROLE OF PUBLIC POLICY

As a consequence of structural, technological and social change the scope and diversity of work-related and other learning needs has been continuously growing in recent years, thus soliciting the expansion and increasing variety of education and training supply. In addition to traditional public and non-profit-oriented providers of education and training programmes, a large spectrum of commercial training organisations have in most countries come to offer programmes responding directly and flexibly to specific training needs expressed by enterprises and individuals, while enterprises themselves have also started to sell training programmes originally developed for their own employees. These developments are seen to reflect the existence of a "*training market*", in which the diversity and flexibility of supply is increasingly able to match strongly heterogeneous and changing demands.

It is however questionable to what extent this diversity of training providers can constitute by itself an *effective training market* so long as unequal conditions of financing, certification, access requirements and legal status tend to establish not an open system of supply and demand, but rather a series of parallel systems isolated from one another, serving different clients and operating under different conditions. Thus, commercial training firms and private universities tend to serve rather enterprise-specific and enterprise-financed education and training, for skilled and highly-skilled workers often well settled in internal labour markets, while public schools and universities and/or jointly-run local non-profit organisations tend to be oriented towards the financially less rewarding provision of more individualised programmes of further education and "labour market training" for the unemployed or otherwise disadvantaged[8].

Segmented labour markets thus tend to produce segmented training systems. There is need, therefore, for careful analysis of what changes in legislation, financing, certification and access requirements would have to be brought about in order to move

gradually towards more open systems of adult education and training which ensure broader ranges of training subjects, high-quality training for all participants and greater social equity. In addition, governments must be especially concerned with training needs which clearly do exist but which are not expressed in terms of training demand because individuals (e.g. certain unemployed or women re-entering the labour market) and enterprises (e.g. small trade or craft firms) are not aware of their skill deficits or do not see the utility of existing training programmes for their specific problems. In this context, the provision of information, advice and orientation is again of particular importance and will often have to be associated with some form of financial support.

A fundamental issue in this context is the extent to which additional and improved training for the unemployed can and should be provided through an open and integrated training market, as compared to special public programmes reserved for the unemployed. Open training markets are generally expected to ensure better quality and responsiveness to changing needs for skills, while many public training measures are being criticized because they are often not followed by satisfactory employment and tend to produce rigid administrative frameworks which easily lose contact with their social and economic environment.

On the other hand, there exists serious doubt whether those who are most in need of skill development, i.e. the poorly educated, low skilled, and socially disadvantaged, will ever be able to get a foot into open training markets without at least some special preparatory help in distinct, sheltered settings. Member countries might therefore wish to consider the development of training systems where special measures do not function in isolation from more valorising programmes in training markets, but are clearly conceived to lead into such markets, either directly or via intermittent work experience.

Finally, in considering possible advantages currently associated with the idea of a training market, it should also be recalled that the multiplication of private training providers in recent years is not seen in many countries as having yet produced a major impact on cost efficiency[13]. This is often explained by the lack of transparency of and information about available programmes and financing mechanisms. It may also be linked to the segmentation of training "markets" or "systems" mentioned above, which has, in particular, so far prevented public institutions from actually competing with commercial private training firms as to the programmes they offer, especially through free determination of their fees.

THE FINANCING OF ADULT EDUCATION, TRAINING AND SKILL FORMATION

Costs and Benefits

There exists today widespread agreement that education and skill development among adults should no longer be considered as a "social cost" but as an economically useful investment in intangible resources without which other forms of investment in material resources will yield sub-optimal results[14]. This interpretation holds true for both micro-economic processes at the level of enterprises and macro-economic development at the level of societies. Nevertheless, it remains impossible to measure

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the benefits deriving from various types of adult learning for individuals, enterprises and societies at large. Efforts to define such benefits in terms of growth of individual income can at best yield average correlations between educational attainment and income. Such studies, however, can take into account only formal education and training. Furthermore, it is difficult if not impossible actually to isolate the impact of additional education and training from the impact of other intervening variables upon changes in income, such as cyclical variations in economic performance, sectoral and local differences in the functioning of labour markets, etc. Similarly, there are difficulties in measuring or predicting the benefit of enterprise-based and/or financed training for the company in terms of productivity increase[5].

The readiness of individuals, enterprises and societies at large to finance adult learning can thus only be justified on the basis of pragmatic considerations about the relative advantages and risks related to engaging or not engaging in such costs and efforts. Consideration of appropriate strategies and policies should, therefore, concentrate on desirable objectives of adult education and training for all parties involved, on cost-efficient organisation of different programmes, and on a fair distribution of costs and benefits. In the absence of objective criteria for such decisions, the most effective and democratic way of proceeding will consist in stimulating negotiated agreements at all levels of economic and public organisation, in which not only governments and the social partners but also other groups of interested consumers and citizens should be actively involved.

Experience shows that the level of financing devoted to educational and training efforts in different countries is influenced, though not predetermined, by variations in GNP, that enterprise expenditure for education, training and skill formation varies strongly even among companies operating under similar economic conditions, and that the motivation of individuals to participate in further education and training does not depend, beyond certain minimum levels of welfare, exclusively or even primarily on income or on expected direct returns.

It could, therefore, be argued that the actual volume of finance and its distribution among various types of education and training for different groups of both young people and adults — while it is of course related to available income and expected benefits — depends to a large extent also on voluntarist action inspired by prevailing cultural and social values in different societies. This should be kept in mind when different modes of financing for adult education and training are discussed.

Different Modes of Financing the Further Education and Training of Adults

Modes of financing adult learning differ in terms of the *sources of finance* and in terms of its *destination* to individuals, enterprises, and/or education and training institutions or organisations. An OECD/CERI report[12] analyses various "models" of financing, which are either already being practised in different countries or which are being discussed as possible ways to enhance the participation in and effectiveness of adult skill development and education. These models reflect two basic and necessarily complementary orientations: the first concentrates on training needs and capacities defined at the level of enterprises in relation with enterprise strategies of human resources management in the context of structural change and technological innovation; the second focuses on alternative ways of financing the recurrent education and training of individuals according to their personal needs and objectives.

Analytically, and in terms of the destination of financial means, one might finally distinguish a third orientation concerning the financing of institutions and organisations providing education and training for adults.

As far as the sources of finance are concerned, they are, of course basically public budgets, training expenditure by enterprises and individual income, which are being combined in various ways. The overall trend in Member countries in recent years has been to limit direct contributions from public budgets to labour market measures in favour of the unemployed and otherwise disadvantaged, and to incite enterprises to invest more in their "human capital". Policies in this respect differ from country to country. They consist in various combinations of legal constraint and inducement to negotiated agreements concerning the volume of money to be spent by enterprises, the creation of collective funds in order to redistribute the costs and benefits of training between different groups of enterprises (especially large and small ones), and, in some cases, the obligation to establish yearly or longer-term training plans specifying the types of programmes and the participation of different groups of workers[7].

In addition to direct public spending for "social" or "labour market" measures and enterprise expenditure, a number of Member countries are envisaging today the reinforced utilisation of unemployment insurance funds for remedial, further training and retraining of the unemployed through more systematic links between income maintenance and participation in training.

Finally, one observes, especially in Scandinavia and in the Anglo-Saxon countries, a certain revival of the debate about possible ways of encouraging active patterns of participation in adult education and training through the provision of financial benefits to individuals, irrespective of whether a person is employed or not. Alternative propositions include publicly-financed individual entitlements or vouchers which could be "used up" according to a person's own choice throughout his or her working life; the creation of mutual savings and insurance funds (eventually integrated into social insurance systems) with individual drawing rights defined in such a way as to encourage the recurrent participation in adult education and training; and, finally, the extension to adults of government-supported loan programmes which some countries are already using for initial post-compulsory education[12].

This debate is generally inspired by strong concerns about equity and freedom of individual choice. The underlying ideas are that, beyond the overall increase of participation in adult education and training, such individualised financial provision could help broaden the range of programmes to include also issues of general culture and social development, encourage more adults to engage in future-oriented training conducive to innovation and entrepreneurship in which existing enterprises may not be directly interested, and help orient those with sufficient initial education and skills among the unemployed away from *ad hoc* measures towards more qualifying and more valorising training programmes.

These objectives could improve the functioning of training markets for adults to the extent that individuals are given sufficient financial support and free choice of when, where and at which price to "buy" different kinds of education and training, assuming that the inducement to spend money on education would increase the volume of education, and that free choice of institutions and programmes would favour improved quality through competition among education providers.

The literature reviewed in the OECD document[12] shows that these are by no means simple issues. Free choice may not be totally compatible with the legitimate

wish of policy-makers to orient further education and training towards future-based fields of activity in which scarcities of skilled labour are observed or expected. Similarly, in times of limited public budgets and distinct hesitations to impose additional taxes or parafiscal levies on enterprises and citizens, some targeting of entitlements towards particular groups of adults may be necessary. Again, this raises problems of how to reconcile equity (training for the disadvantaged, least skilled, etc.) with efficiency (training for the better skilled, permanently employed, etc.).

CONCLUSIONS

Adult education and training arise as a major challenge in times of intense structural change and the rapid ageing of industrial societies, requiring individuals to continuously learn and adapt in the light of ongoing transformations both at work and in other spheres of family, social and cultural life.

Two major tendencies characterise the development of education and training systems: the first is the increasing involvement of enterprises in the skill formation of both young people and adults; the second is the gradual redistribution of organised learning opportunities in favour of adults, not only for demographic reasons, but also because more adults, and increasingly older adults, participate in formal and informal education, training and skill formation at work and in educational institutions.

The development of enterprise-based training (i.e. training provided in enterprises or provided in educational institutions but closely related to work and mainly financed through enterprises) has strongly increased the volume of adult education and training and contributed to the upskilling of the adult population. At the same time, it has reinforced labour market segregation by neglecting the skill development of lower-skilled workers and of women and by widening the opportunity gap between employed workers and the unemployed.

While enterprise-based training is an element of human resources management and helps facilitate both vertical and horizontal mobility within the enterprise, appreciations vary as to its impact on inter-enterprise mobility in external labour markets. Eventual rigidities are today probably less related to so-called "specific" or non-transferable skills to the extent that the division of labour is reduced and that more and more jobs require a great deal of polyvalence, more abstract thinking, and closer links to the surrounding work environment. What might cause problems in the longer term is rather the willingness and capacity of enterprises to provide substantial training to a rising proportion of voluntarily or involuntarily mobile workers, whether high- or low-skilled. Fears are therefore expressed that growing numbers of workers will not find the appropriate learning opportunities necessary for keeping up to date with technological change and/or to retrain for new occupations.

Finally, strong differences are observed between the training efforts of different groups of enterprises — differences related to sectoral particularities, the size of enterprises and their labour intensity as compared to capital intensity. Training tends to be provided for capital-intensive rather than for labour-intensive activities, in big rather than in small enterprises, and, not surprisingly, in developing rather than in declining economic sectors.

Thus, while enterprise-based training has been the pillar of adult education and training in recent years and should be further developed, especially in enterprises

which are not yet actively engaged in the development of their human resources, there are reasons to believe that complementary learning opportunities for adults should be provided on a larger scale in existing institutions of post–compulsory and higher education and in mixed settings of formal and informal education and training organised at local, regional and sectoral levels.

At the same time, educational institutions would also have to play an important role in helping adults to understand and cope with social and cultural change, essential to their capacity to take an active part in public life as citizens, consumers and members of different interest groups, cultural associations, etc.

Systems of formal post–compulsory and higher education might thus be called upon to contribute more actively to the extension and broadening of learning opportunities for adults — opportunities which should respond to but also transcend specific training needs defined at the level of enterprises.

Stronger involvement of educational institutions in further education and training for adults would present a serious challenge to education systems. Besides an extension of teaching capacity, it would imply greater responsiveness of curricula and organisational frameworks to highly divergent and changing needs for skills and competences of both individuals and enterprises. It is, therefore, often suggested that the market aspects of adult education and training should be strengthened, and that traditional institutions of post–compulsory and higher education should have to compete more actively for training candidates with private schools and multiple training associations of employers, unions, churches, etc. This raises numerous questions relating, in particular, to the autonomy of educational institutions in curricula planning and the fixing of training fees, as well as to the revision of entrance requirements.

The extension and development of training markets can contribute to broader educational provision beyond the specific needs of enterprises only if individuals are relatively free to choose training programmes according to their own needs and interests (which may or may not coincide with those of their employers) and if all adults can participate, irrespective of whether they are employed or not. This would require improved information and counselling systems, but also appropriate financing frameworks which could take the form of publicly–financed loans and/or entitlements, or of mutual savings and insurance funds (including, eventually, unemployment insurance).

Policy debate thus concentrates today on such questions as how to develop both enterprise–based training and broader, more independent education and training that will serve multiple and highly divergent needs of adults related to both work and other spheres of life. This involves choices between different modes of financing (both with respect to the sources and the destination of education and training expenditure) and organisational choices as to the links between initial and further, formal and informal, general and vocational education and training for both young people and adults. What is at stake is the capacity of modern societies to provide all their members with broad and valorising opportunities for continuous learning.

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IV

STRENGTHENING THE SCIENTIFIC AND TECHNOLOGICAL POTENTIAL FOR SOCIAL AND ECONOMIC DEVELOPMENT: THE ROLE OF HIGHER EDUCATION

The competitiveness of OECD countries will increasingly depend on their scientific and technological capacity as the main source of diversification and development of their economies. In this, the role of higher education is of special importance. It is the main source for the supply of highly-qualified scientific and technical personnel; for the advancement of knowledge, through research and development; for facilitating technological change; and for helping business managers and entrepreneurs to develop a capacity for technological innovation.

Indeed, over the past thirty years or so, new pressures deriving from the above considerations, together with the impact of a much larger and varied student population, have led to substantially higher demands on systems of higher education in all Member countries. The traditional instructional, scholarly and professional functions of these systems have thereby been broadened. So much so that a serious rethinking of the roles and functions of higher education institutions, particularly universities, is currently evident in all Member countries[1]. Increasingly, such rethinking has to take into account the new and intensified relationships of higher education institutions with other sectors of society, including enterprises. In fact, more and more frequently, enterprises are seeking closer partnerships with higher education institutions, covering both teaching and research and as a means of facilitating the diffusion of innovation. Moreover, tertiary institutions are increasingly under scrutiny for the role they can play in the social and economic development of regions.

Thus, few today would question the importance of involving higher education in efforts to cope with the complex, inter-related and changing problems with which OECD countries are confronted. These problems affect all dimensions of national life: they are at the same time economic, social, cultural and political. Increasingly an international dimension attaches to them. Higher education systems, with their intellectual resources spanning the whole range of scientific and technical achievement, have a unique role to play. An important question, however, is how they can respond more effectively to the needs of society without endangering their longer-term responsibilities to science, as repositories of national culture, and as the essential critics of much that is taken for granted in the social order.

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KNOWLEDGE AS A FACTOR IN SOCIO-ECONOMIC CHANGE

Although few economists now think it possible to quantify the overall contribution of scientific progress to national economic growth, even fewer would doubt its significance. It is certainly possible to set out some of the mechanisms by which the scientific system (and higher education as an important element in that system) contributes to economic and social development. These mechanisms can be related to three of the major functions of higher education: the advancement of knowledge; provision of advanced training; and the transfer of technology and expertise to economic and social institutions.

Advancing Knowledge : Changing Patterns of Research and its Applications

Although science, and knowledge more generally, has long been seen as a good in itself, part of national culture, the argument for its support by government has never been allowed to rest on that assumption. Even in the 1960s, when the idea of a new university was a familiar one, economic arguments for the support of science were felt to be important. Cultural arguments alone could not justify the level of investment which seemed necessary, but nor did they have to. Under the right conditions new knowledge would of itself give rise to technological innovation, and thence to economic growth.

As early as 1968 Ben-David[2] spelled out some of those conditions. Universities would have to be entrepreneurial, but it would be a mistake to try to direct research down lines chosen for their utility. Policy more or less followed the prescription set out here, and governments tended to fund the research that the scientific community identified as important. It was also a time of new initiatives in higher education: the search for new forms and new structures of learning and scholarship, in which the quest for interdisciplinarity occupied a prominent position[3]. This period was followed by one in which on the one hand new goals were set for science[4] but, on the other hand, knowledge as such did not seem so very useful. Governments in many countries sought to tie their contributions to science to clearly-defined objectives.

Today we are in a new phase of science and technology policy: an age of "strategic science". It is also one in which governments are seeking more explicit links to the contribution that science and technology can make to economic growth and social development, as discussed in a recent OECD Ministerial meeting on this subject[5]. The fields on which today so much hope is pinned — biotechnology, informatics and the like — are unusual in being simultaneously technology and science. They have to be dealt with in new ways: supported and equipped lavishly, and not too much interfered with by government. However, in many countries this lavish treatment is at the cost of the rest of science which some seem to think incapable of being in any way useful. (A recent proposal of the Swedish goverment to revitalise the humanities should however be noted here.) At the same time, there is a powerful belief that research should be concentrated and efficiently organised, in a way which owes much to doctrines of industrial research organisation. There are apparently few today who seem to believe that the advancement of knowledge, in itself, is of social and economic value to society. Interestingly, amongst the rare few are major leaders of Japanese industry who are more convinced than most politicians that higher education institutions should do what they are good at, not what industry is better at.

In all Member countries, albeit to varying extents, the higher education system is a major component in national research capability. Between 13 and 30 per cent of R&D is carried out there[6]. The irony of the last few years has been that just as the importance of the need to "mobilise" the university research effort was coming to be recognised, the universities reached a low point in their level of resources. Lack of resources and of "new blood", a consequence both of declining public spending and the research policies of the 1970s, meant obsolescent equipment and demotivated staff. Higher education institutions were less able to respond to the demands coming to be placed upon them than they had been for years. Still more recently, steps have been taken in a number of Member countries to remedy this situation: new blood schemes, new investment in apparatus, carefully targeted additional resources have certainly helped this "mobilisation" process. But complacency would be misplaced. Whatever the importance of the new fields of technology to which these initiatives are largely, and in many countries exclusively, addressed (they need hardly be named: biotechnology, micro–electronics, new materials, etc.), they by no means correspond to all the senses in which national economic and social development depends upon the universities' scientific and technological potential.

In the majority of Member countries, traditional *basic research*, with potential outcomes that are both long range and unpredictable, is the function of universities which receives the greatest emphasis and the one that is viewed as their most distinctive feature. But contemporary conditions raise serious questions as to the degree of involvement of different universities in this type of research and the extent to which, for all of them, basic research efforts and performance should indeed be the best guide for the assessment of their standing and prestige :

- Rising costs of research, particularly, but not only, in the physical and biological sciences, create growing pressure to concentrate limited funds in a few institutions even more than is the case at the moment;
- In addition, the growing internationalisation of research underlines more than ever the need for quality and excellence, and, therefore, for concentration and choice;
- There exist growing needs for scholarly and professional activities other than basic research.

Of these new needs, that for *applied research and development* is particularly important. It is triggered by a number of factors:

- The time–gap between basic research and its application has in many fields become so short as to reduce or eliminate the distinction;
- This is further enhanced by the fact that, increasingly, technology drives science through the development of new instrumentation;
- The economic vitality of modern, industrialised societies depends on a continuing flow of technical innovation and advance, creating substantial demand for closer relationships between research, development and application phases of the whole process.

There exists a corresponding need for effective *technology transfer* and *knowledge diffusion*:

- The full economic benefit of innovation occurs only once this has been absorbed by all components of the manufacturing and service sectors;

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— The pertinent political and managerial decisions require a growing amount of technical assistance, technology assessment and policy analysis, for managers and policy–makers in both the public and private sectors.

The growing complexity and inter–relationship of contemporary political, economic and social issues, together with the profusion of information and glut of data, place an ever greater premium on *interdisciplinary research*, but also on the *aggregation, synthesis and interpretation* of information. Societies seem to be drowning in information, often mistaken for knowledge.

The above trends, propelled largely by the search for more diversified sources of research funding beyond that provided by central governments, have led to closer links between universities and enterprises, often combined with regional development questions, as evidenced by the spread of science parks and technopolises.

Given these pressures on university research — the growing links to other aspects of the economy, its regional impact, its effectiveness on technology transfer and knowledge diffusion, and its growing reliance on second stream funding — there is a clear need for improved joint planning in a three–way sharing of decision–making between universities, the government (at various levels) and the private sector. An important consideration in such planning is how to avoid that the criteria for judging the value and performance of research are not unduly dominated by its contribution to short–term external requirements.

Advanced Training: Towards an Increased Professionalisation of Higher Education Courses?

It hardly needs to be said that higher education systems have contributed uniquely to national development through their provision of advanced training. For hundreds of years universities have provided society with its law–makers, its physicians, its priests and its educators. At the same time there was a liberal education function: the traditional university could not be understood only in terms of economic roles. Its task was at the same time to "civilise". The great American educator Robert Hutchins argued in 1953 that the responsibility of the university was above all to the needs of the democratic community, to the wisdom of the people.

As university systems expanded, the range of occupational roles for which they prepared inevitably evolved, and Hutchins' commitment to the moral, aesthetic and spiritual functions of the university was forgotten. The higher education systems of the 1960s and 1970s were evolving through a number of processes, which in many ways could be understood as a "blurring of the boundaries" between the various roles they perform, as they took on new functions[7]. This has three implications which need to be noted here. First, responsibilities towards the economic system (preparation for work roles) came to dominate other functions. Second, the higher education system came to play a crucial role in the growth of service sector occupations. Rapid growth in the size of service–providing occupations (for example in the social services) came to be associated with professionalisation processes. To make occupational training a function of the higher education system was to take an important step to professional closure and thence to enhanced status. Third, at the post–graduate level a gradual shift occurred from the idea of doctoral training as apprenticeship for a life of science, to doctoral training as something connected with research manpower targets. Today, post–graduate education is pushed from above and below towards ever greater

instrumentalism. On the one hand, there is a growing preference for short-cycle masters' degrees offering clearly-defined skills. On the other hand, governments are increasingly seeking to rationalise research training in terms of both "process" and "product"[8].

Thus, a main feature of higher education systems in all OECD countries has been the marked increase in the demand for *career-oriented courses of study* at all levels: post-secondary "diploma" level, first degree and the post-graduate level. This has arisen from a number of circumstances:

- Not only the numbers, but also the characteristics of *young* people enrolled in higher education have changed appreciably: they come from more diverse social backgrounds, and have different motivations and a diversified range of educational qualifications. A greater proportion of them tend to view higher education in a more instrumental way of access to jobs available in the labour market.
- All countries, to a greater or lesser extent, are witnessing an increase in *adult and part-time students:* the number of occupations requiring post-secondary qualifications is growing; and there are also new educational demands arising from the changing status of women and the assimilation of minorities and immigrants — all leading to the demand for "second chance" degree programmes. The accelerating obsolescence of knowledge and information due to changes in job content as well as categories of jobs, has resulted in a growing need for recurrent formal instruction for maintenance and adaptation of competence[9].
- *The nature of the labour market in our "expert" society* has caused both governments and employers in most countries to place a premium on technical expertise and occupational competence as an educational outcome, as well as on matching availability of programmes to anticipated employment needs; this has led in some countries to pressure for shortened and professionally-oriented qualifications or credentials.
- *Similar pressures are also arising at the post-graduate level,* as indicated above. In a growing number of occupations and professions, there is a need for an intermediate post-graduate degree in between the first degree and the research-oriented doctorate; where such degrees exist the majority of students are employed.

The pressures outlined above have serious consequences for all higher education institutions, though they apply differently to different types of institutions, i.e. as between traditional universities and those of a more vocationally-oriented nature, such as community colleges, polytechnics, etc. In general, they tend to accentuate the *functional differentiation* among institutions. In all cases, however, but more particularly in the case of universities, the fundamental question which is raised can be posed as follows: does the current trend towards scientific and technological subjects and the professionalisation of higher education courses lead to a risk of a greater polarisation between the more strictly academic and the more professional dimensions of higher education? More particularly, is there a risk of undermining the position of certain areas of study, particularly of the social sciences and humanities which provide the type of skills that will be even more necessary in an increasingly technologically-based society?

In this, *the central issue is the curriculum*. The recent past has shown time and again the danger of tying curricula too closely to immediate labour market needs, and the need to avoid narrow specialisation, not only because of its rapid obsolescence, but also because of its inability to deal with complex realities and rapid change. Recognising the demand for greater career orientation in university instruction, what mechanisms can be established to ensure the constant renegotiation of the content and structure of higher education studies so as to maintain a proper balance between their vocational and general education purposes? This raises the question of how to establish closer co-operation between governments, employers and universities in order to identify long-term socio-economic trends and secular changes in employment patterns as a guide to higher education institutions in defining curriculum content.

Technology Transfer: Towards New Forms of University/Enterprise Partnerships?

In the last few years the governments of almost all OECD countries have come to see science and technology as a source of new strategic opportunities. Many reports attest to the importance which governments have come to attach to new science-based industries as a source of growth and employment. This point of view is supported by industry, though there are differences of opinion as to the ways in which governments should intervene. It is nonetheless widely agreed that as industry moves into new areas of advanced technology, it develops a growing dependence on the "science and engineering base". This has led corporations to develop new and stronger links with universities.

Many industrialists are well aware of industry's inability to do for itself many of the things which its dependence on advanced science and technology requires. Broadly speaking, industry cannot train the scientists it needs (although it may wish to retrain them), nor is it economic for industry itself to follow up all the potentially interesting ideas which emerge from its work.

> "So the more emphasis that industry places on technology, the more industry depends upon the new knowledge and new talent generated by our universities"[10].

This quotation from the Chairman of the U.S. National Science Board and R&D director of General Electric Corporation (United States) is not untypical of the farsighted industrialist today.

Industry has a variety of needs which the higher education system could and should meet: these differ considerably from one industry to another, and from large to small firms. With growing realisation of the diversity and complexity of these needs, and the difficulties which in reality mark relationships in many places, it became clear that new initiatives were needed. As an OECD report puts it:

> "University/industry relations have entered a new phase in terms of goals as well as magnitude. The need to explore new forms of communication and collaboration arises partly from the pressure of competition on the side of industry, partly from financial stringency on the part of the university, and on the whole from the fundamental scientific and technological requirements of progress in many areas of research"[11].

Small firms in relatively non-advanced sectors, which may form the bulk of the industrial structure in many areas, have very different needs and expectations from

those of multinationals in the electronics or chemical industries. Their needs may require, in the first place, easing their access to the higher education system. There is evidence that fundamental transformations can be brought about in declining industries by long-term collaborations involving many academic departments and a mixture of research and vocational training and retraining. The Finnish Asko project is an example[12]. In the advanced sectors, matters are very different. What firms in those sectors typically want is access to path-breaking research of the highest quality. The experience of the Massachusetts Institute of Technology without a doubt supports the view that academic excellence is the single most important factor in attracting international industry. But there are many jobs to be done, and it is vital to bear in mind the diversity of needs which industry (let alone the other organisations and sectors of society) addresses to the higher education system.

At the same time, it must be recognised that some of the most dynamic firms are at the same research level as some of the most prestigious universities and have equipment and technological potential that enables them to be at the forefront of research and development. This is leading to a new sharing of the roles in knowledge creation and diffusion which has implications for the technology transfer processes presently going on between universities and enterprises, and is generally leading to closer collaboration between them.

These collaborative efforts, which are bringing basic and applied research closer together, can take several forms: common research contracts, joint staffs, agreements concerning materials, courses or seminars, joint professorships. Moreover, new structures, such as technology transfer centres, science parks and technopolises are emerging at the intellectual and physical periphery of universities as mechanisms for improving the diffusion of knowledge. They also help in developing the technological and economic potential of a region.

In general, it must be recognised that the development of industry-university relations depends to an enormous extent on individual and institutional initiatives. This requires an environment which encourages relations between the two sectors, as well as a high level of institutional flexibility to pursue different approaches and modes of co-operation. There is, therefore, need for providing incentives to promote various forms of joint efforts by industry and universities in research, education and retraining, and for multiplying lines of communication, through liaison officers, as well as mobility of personnel.

Finally, it is clear that the growing role of innovation in the economy brings into prominence the links between universities and enterprises, but also raises some fundamental questions about them. The nature of these links, and the balance of roles, will vary according to the size and nature of the firms and the standing of the individual university concerned, but in all cases closer collaboration can help to achieve more direct and rapid application of research results. Yet it is essential that safeguards should be established to ensure the transparence of research and responsibility of research results as well as prevent distortions in the university's basic functions. This is particularly so in the connections between large, science-based companies and universities. An important question here is whether it may not be advisable to spell out guidelines of proper conduct within which these relationships can be developed.

PROBLEMS, CHALLENGES AND PROSPECTS: A SUMMARY

Higher education institutions, which in most OECD countries contain a significant share of the nation's science system, contribute in a variety of ways to national development. They contribute through their fundamental research, through advancing knowledge, through their formal teaching, through their extension and retraining activities, and (of particular relevance here) through the provision of research training. They contribute through the many ways in which they seek to put their expertise at the service of the economy (through technology transfer), of the policy (for example in filling advisory roles), and of the community.

In the past five years or so various initiatives have been taken to enhance these contributions. And in a certain way they have undoubtedly done so. These initiatives have certainly played a role in stimulating the development of the new high-technology sectors. It is here that the greatest benefits have been reaped from the measures taken to bring new blood into the universities and facilitate the movement of ideas out of them: from the new blood schemes, the science park subsidies, the (carefully targeted) additions to research budgets. Certain areas of professional training, including post-graduate business studies, have also grown rapidly as graduates have assessed and sought to maximize their employment chances in difficult times. In addition, there can be little doubt that, though much still remains to be done, resources are being used more efficiently, and universities are increasingly being managed according to best industrial practice.

However, the proper frame of reference for judging the current situation and the adequacy of initiatives which have been taken is not simply the rate of expansion in biotechnology research. A more adequate assessment of the current situation requires that the contribution which higher education institutions are making today to national well-being, both social and economic, be judged in relation to the contribution which they might be making. It sometimes seems as though an overly-narrow vocationalism has struck to the very heart of higher education. It is generally claimed that this is only in line with current economic realities. But the fundamental questions which have to be asked are much more complicated and do not admit of so simple an answer. These questions relate to the shape of the economy in ten or twenty years time, and the nature of the integration of the economy into society. Declining student numbers, with the expectation of future growth, provide both challenge and opportunity, for they permit preparation for the future.

Planning for the future must take account of two sets of considerations: *a)* resolving the problems currently confronting systems of higher education; *b)* responding to the needs of the likely education of the industrial and social structures, insofar as these can be anticipated.

Higher Education Issues

There has been a good deal of debate recently as to whether one should properly speak of higher education systems, particularly the universities, today as "in crisis". It is certainly true that the old order, in terms of valued functions, institutional status system, traditional values, has been shaken to its foundations and in parts destroyed. But of course the world has changed too, and to allow universities to turn themselves into microcosms of a lost world would be as absurd as to turn them into second rate businesses.

The major issues for the future can be largely identified by reference to some of the criticisms which are reasonably made of today's academic system:

i) There is today little capacity, or indeed will, to innovate, other than in finding ways of coping with cuts. This raises questions about the internal management of institutions of higher education and of specific measures for their revitalisation, but also of the total outlays of financial resources, their distribution among the various sectors of the system and how the costs will be shared between individuals, the State and the private sector.

ii) Curricula in certain fields are too closely tied to current labour market needs, while in others they float indecisively, unclear as to purposes and objectives. How curricula are renegotiated and the balance between general education and vocational specialisation are crucial issues for the future.

iii) Outside favoured fields, research is probably becoming routine and risk–avoiding. Moreover, some of the assumptions governing the organisational structures being forced on research, and which are drawn from industrial R&D, certainly do not apply in much of science and will not enhance the effectiveness of research. Related questions concern the setting of priorities between research in science and technology, on the one hand, and the arts and the humanities, on the other, including consideration of the limits to shifting scientific research to bodies outside the universities.

iv) There is today a diminution in the concern with the ideals of liberal education, the cultural and moral functions embodied in the notion of *Bildung*. How, then, to avoid the risk of undermining the cultural objectives of higher education on which the long–term development of democratic societies rests?

v) Considerations of social justice, who receives higher education, equality of opportunity, are no longer discussed — though it should be noted that much has changed here since this discussion began.

vi) Higher education institutions have yet to meet the full challenge of the demand for training and retraining of non–traditional students, especially adults, both for professional upgrading and recycling, as well as for personal fulfilment in an increasingly leisure–intensive society.

Science and Technology Issues

The likely evolution of industrial and social structures will be influenced by matters such as the extent to which (in the light of international competition) expansion of the high–technology sectors will take place; the extent to which the service sector will replace (or, as some believe, complement) the productive sector; the changing relations between traditional professions and para–professions in the provision of certain services; the scope for regeneration of some traditional industries through technological change (as has happened with the textile and clothing industries in some parts); the future acceptability of regional imbalances in wealth, and the future of population movements; the changing role of multinational corporations.

Science and technology both reflect the world and help to change it. The same is true, indirectly, of the institutions dedicated to the advance of the sciences and of technology. Pierre Papon argued in 1978 that the most productive periods of scientific and technological development occurred in periods when some "grand design" took

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precedence over narrow administrative considerations[13]. The challenge to policy-makers today is a challenge to their vision: in their capacity to rise above the pressing problems of the moment. How are science and technology to be mobilised in the interest of a better future for all? Given this as an objective, the following issues demand discussion:

i) It is no accident that in many OECD countries there is a growing concern with scientific and technological forecasting, with "looking ahead". The hope is that sources of future opportunity, of the possibilities for new sorts of science-based technologies or even industries can be identified. What sort of a role should these forecasts play in setting some longer-term objectives for university science?

ii) Balanced growth is likely to depend not only on the rapid generation of new technology, but on the capacity for its management and the capabilities of society to assimilate it, as underlined in the recent OECD Declaration on the social and economic consequences of technology (14). In the long run, this has a number of consequences, including provision of retraining programmes and other social or adaptive policy measures. But the implications for the science and technology system go much deeper. What sorts of innovations does society want? How can the science system itself ease the process of mutual adaptation? Does the growing dependence of given economic and service sectors upon technology imply the need for new sorts of (semi) professions as has happened, for example, in medicine? New forms of integration of technical and social sciences in curricula may become vital.

iii) In most Member countries, advanced high-technology industry is already becoming regionally concentrated. In these regions, good relations with local universities are generally developing and the idea of the science park has some real meaning. But what of other regions, many of them dependent on declining industry? What sorts of roles in regional economies would be appropriate there, and what steps can be taken to facilitate adequate discharge of these roles?

iv) What steps can and should be taken to facilitate the access of social organisations other than industry (and of course government) to the resources which university research has available? The "science shops" in the Netherlands were intended to offer the possibilities of "commissioning" research to community, trade union, environmental and other groups which lacked financial resources. They have been much copied. What are the potential benefits and risks of taking much larger steps to providing more equality of access to university research?

v) A number of elements in the internationalisation of university research systems are to be observed today. They include growing shares of foreign students at the post-graduate level; changing recruitment patterns; large corporations extending beyond their national boundaries in developing links with universities; new steps to promote mobility and international exchange within certain defined groupings of countries (such as the European Community). What are the likely implications of these trends for future national specialisation within research systems, and what advantages and disadvantages does this pose for social and economic development?

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V

STRATEGIES FOR CHANGE

A NEW IMPERATIVE

When Education Ministers last met in OECD, in November 1984, the general report which guided their deliberations underlined the importance of balancing mandates for change with the need for continuity:

> "The main goals and aspirations of policy inherited from recent decades remain essentially valid... even if their interpretation and more specific priorities alter with time. For education systems to be in a state of constant, rapid flux is no more desirable than that they should be totally static, impervious to change in the world around them"[1].

The questions about change that were current then revolved essentially around issues of quality — what changes were needed to make education more effective in carrying out its traditional mission in the context of greater demand for it and wider participation in it — and responsiveness to the new environment in which education operated.

In the late 1980s those pressures for change have been intensified by further social change against a background of wide-ranging and basic economic developments. In some quarters, educational deficiencies and skill mismatches have been blamed for at least some unemployment, particularly long-term unemployment. In others, education is also being held accountable in part for sluggish output growth in many OECD countries to the extent that economic performance is viewed to hinge more and more on competitiveness based on effective performance of the labour force and development and application of advanced technologies. Across the board, there is consensus that education, training and retraining have an essential role to play in revitalising the OECD economies and mastering economic, technological and social change.

Ultimately these developments have reinforced collateral political and social shifts to propel the public debate about achieving full employment up to another level: how to create a more fully active society. Constraints on public spending and taxpayer resentment against unrestricted income support have been a fact of economic life in many OECD countries for years. These have converged with the growing resentment among income transfer recipients who, more than simple economic security, want

fuller access to the mainstream of society. The target of full employment, when defined in its usual terms, is simply beyond the medium-term economic horizon. Rather, the pressure is for redefining "activity" to include not just conventional private or public sector paid employment, but participation in local employment initiatives, self-employment and other forms of socially meaningful activities. Such participation, while not necessarily linked as a condition of eligibility for transfer payments, is seen as pairing income security with a fuller participation in economic, social and other activities.

There are three dimensions to the essential role that education has to play in all this:

i) contributing to a flexible labour force, innovative management and research, and new blood for entrepreneurship;

ii) providing the stable general and vocational foundation of skills and competences, opportunities for further education and training and retraining, and second-chance opportunities to update and upgrade skills and competences, and make up for deficiencies in qualifications;

iii) providing the trained, adaptable and flexible labour forces in regions hit by structural change and unemployment.

But a commitment to investment in human capital alone is not enough to create jobs or sustain persons in an active society. It can only be effective if it takes place in tandem with other policies and is part of an overall strategy embraced by public authorities as well as the social partners, of restructuring and modernising OECD economies, regions and enterprises.

It is hardly surprising that these considerations have provided the impetus for a public debate on the reconfiguration of the relationships between education and the economy, or that the circle of those with an interest in the debate encompasses much more than the customary circle of education policy-makers. But this creates a paradox for public policy-makers and the social partners trying to mould a new relationship between education and the economy in a changing society. At the same time that education and training are under pressure to contribute more to the effective economic performance of individuals, enterprises and economies, they are becoming harder to manage in policy terms. Education and training are not what they used to be, in the sense that the distinction between the two is blurring, and that learning is not coterminous with the end of (extended) adolescence: rather, they increasingly take place throughout the individual's working life. Moreover, education and training are less and less the concern of education ministries alone as they are provided increasingly by labour market authorities, employers and others whose main mission has been something other than providing education. Finally, though responsibility for scientific and technological research and the preparation of highly-qualified manpower have never been confined solely to educational institutions of higher learning, these activities are increasingly taking place in industry and other settings outside the education community.

None of this is to say that the responsibility for changes resulting from the new relationships between education and the economy is beyond the reach of the traditional education community and its policy-makers. In fact, much of the change that is needed is well within their ambit and the process of change seems likely to follow that of earlier evolutions in educational policies and practices. But even changes there need to accommodate, without displacing other objectives, a proper role

for education in the economic sphere. There is also a need to improve the compatibility of conventional educational institutional provisions with other emerging arrangements for providing education and training, carrying out scientific and technological research and development, and applying those results in an economic setting.

It is also obvious that the responsibility for action does not end with public authorities. The clear and growing vested interest of the social partners in what happens in education and training reflects their growing burden of responsibility as well. This responsibility extends from the direct provision of education and training for workers who are already employed, to active involvement in advising public authorities in general, and education and training providers in particular, with regard to the content, certification and timing of education and training for young people and others seeking employment.

In this context, policy-makers are likely to find that the customary levers for policy change are ineffective, or at least insufficient, and, by themselves, not always appropriate. Selecting strategies for change is more complicated than specifying objectives for change and choosing directives and channels within a largely hierarchical authority structure. That approach may have its place in the context of changing policies and practices internal to the formal education enterprise. But, more and more, it must be complemented by a strategy of coaxing, consensus building, collaboration and partnerships, based on more careful structure of incentives and rewards internal to conventional education arrangements, and on the joint pursuit, by education authorities and other *de facto* education providers, of mutually agreed objectives. For this to succeed requires understanding and taking account of the goals and behaviour of other institutional players as well as of individuals and of the dynamics by which they make and carry out decisions.

The result is not likely to be neat. The multiple goals of all the institutional players and individuals, together with the abundance of arrangements by which education is provided, means that strategies for change may be neither unitary nor coherent: what changes curriculum in one setting may not change it in another, what increases training by large enterprises may not do it for small enterprises. Multiple overlapping mechanisms may be needed to achieve the mix of educational outcomes, which, depending on national circumstances, is most appropriate.

The following discussion of strategies for change is divided into four sections. The first section examines how the dialogue between education and economic players might be broadened to include all the interested parties, and how it might better incorporate the issues that have material consequences for education and training policies and practices. This dialogue is critical because, until and unless there is full involvement of public policy-makers *and* the social partners, meaningful and lasting change is unachievable. The subsequent sections examine mechanisms for inducing change inside the classroom, for expanding and improving "markets" for education and training, and improving the recognition and transferability of competences. Beyond stressing the importance of a dialogue, this structure is also intended to suggest the range of major issues that, depending on national and regional circumstances, might be taken up in the dialogue.

ESTABLISHING A NEW DIALOGUE BETWEEN EDUCATION AND THE ECONOMY

The success of the education enterprise in meeting economic objectives in the past — workforce preparation and the support of scientific research and development — has reflected both an internal continuity in the institutional framework and an external stability in economic conditions, particularly with regard to expectations about what the economy needed and what education could provide. The interdependency between education and the economy, though not necessarily static, was generally predictable. The adaptation mechanisms for evaluating external demands on the quality and quantity of educational output, though not always perfect because of sometimes competing and even inconsistent goals, worked reasonably well, quickly enough.

Current circumstances require adaptation in those communication channels. For one thing, the institutional base of education providers has diversified. With that, the opportunities for duplication of services in some cases, as well as cost-effective competition, divisions of labour and responsibilities among providers have multiplied. Simultaneously, conjunctural and structural changes in the economy have accelerated the pace of change in skills and qualification requirements and introduced a high degree of uncertainty about the direction and extent of future change. The pace of scientific research has accelerated, shortening the cycle between research breakthroughs and their commercial application. This has been both the cause and the effect of shifts in the respective research and development efforts of universities and enterprises.

Communication among education and training providers, related public authorities, employers and trade unions is essential in order to identify and highlight:

i) the differences in missions, goals, objectives, and time horizons that exist between the different institutional players, and the different structures of incentives and disincentives within which they operate;

ii) the changes and uncertainties affecting the workplace, labour markets and product markets, and the implications of those changes for the skills and competences needed for employment as well as for research development, and the diffusion of scientific knowledge;

iii) the desirable outcomes of education and training, the specific responsibilities of different institutional players in achieving those outcomes, the constraints within which they must be achieved, and the criteria by which they should be evaluated;

iv) groups in the population who have particular education and training needs and indicate where the responsibility lies for meeting those needs.

There should be nothing especially controversial about these points of information if all the institutional players accept the need for an open dialogue. They provide the basis of common understanding on which consultation, co-operation and, if needed, collaboration can build.

It is not self-evident, however, in what forum the dialogue should take place, and most importantly, whether and how the locus of advising, decision-making and, ultimately, accountability should be redrawn. Is a better flow of information by itself enough to induce the necessary changes in education and the economy and the relationship between the two? Will better information improve accountability, or are

different measures of accountability needed together with a reallocation of decision-making authority over certain matters?

Obviously the answers depend on existing national circumstances and institutional arrangements which vary across the three different functional areas considered below. But the answers are critical if more detailed strategies for change are to have any effect.

ACHIEVING CHANGE INSIDE THE CLASSROOM

Policy changes in the education and training of individuals mean nothing until they produce change inside the classroom. In that regard there are three policy levers for change: the curriculum — the content of what is taught; teaching — who does it and how it is done; the students — who is in the classroom.

In the context of the debate about what form the relationship between education and the economy should take and how it might be changed, the issue of appropriate *curriculum content* is central. How must the classroom experience change better to equip students to meet the demands put on them outside the classroom? Successful and effective change depends, first, on establishing the dialogue discussed above, so as to identify the relevant changes in the economy and clarify their implications for the skills and competences that persons need when they leave education and training. From that point, curriculum decisions should reflect a full debate on desired educational outcomes, the relation between those outcomes and existing education credentials, and the technical content of the teaching and learning experience for achieving those outcomes, particularly for students at different levels of ability. Curriculum changes should also ensure that pathways for development are not overly restrictive, preparing only for entry into higher education or leading to a dead end that does not allow even lateral movement into another developmental track. In the initial education phase, the curriculum should be suited in any event to providing a foundation from which to pursue further education and training during adulthood.

The question of who does the *teaching* and how it is done derives very much from problems of the condition of teaching, including teacher pay and conditions of work. But it also embraces initial teacher preparation and in-service training. Improvements in pay and work conditions may raise the status of teaching enough to upgrade the quality of persons entering the profession. But preparation for it, as well as in-service training for those already in the classroom, needs to go hand in hand with changes in the curriculum. The expansion of computer literacy training or the adoption of computer-assisted instruction, for example, carry with them a heavy obligation for parallel professional preparation for teachers. Even that is not likely to be enough to improve the quality of instruction in certain subject areas, such as mathematics and computer sciences where the demand outside teaching for qualified persons pushes salaries beyond the point where most educational institutions can compete. In addition to offering the higher pay needed to attract persons with those qualifications to teaching, authorities may want to consider alternative arrangements for bringing such persons into the classroom without necessarily assimilating them into the teaching profession. This might be achieved through taking persons on loan from industry who, though lacking formal teaching credentials, are otherwise qualified, and offering streamlined preparation in instructional techniques or teaming them up with

experienced classroom instructors. Moves in this direction will require effective arrangements for constructive dialogue between governments and the organised teaching profession.

The third interlocking piece of the policy change puzzle, *who in the classroom is being effectively taught*, is perhaps the hardest to achieve. It is partially dependent on successfully changing curriculum and teaching. Early school-leavers, those who, because of their educational deficiencies, are most at risk in the labour market and least prepared otherwise for active life, are not likely to stay on in school longer (or learn more) unless the learning experience in the classroom is better adapted to their needs. Where conventional classroom techniques are not enough they may benefit from individualised instruction, alternative approaches to learning ("learning by doing"), or other adaptations in the curriculum. In a similar vein, it is especially important that the curriculum be sufficiently diversified, at the upper secondary level in particular, to be of value in its own right to the full cross-section of students, not simply those going on to higher education.

Quite apart from the quality of the classroom experience itself, *financial support* is an important determinant of who is in the classroom. This holds for participation in education and training for upper secondary, higher and other types of education and training preceding full-time entry into the labour market or other forms of active life, as well as for further education and training of adults. If educational opportunities are not to be allocated solely on the basis of immediate ability to pay (or, in the case of enterprise-based training, on the basis of whether short-term productivity gains can amortize the training costs), there must be financial intervention to even out the distribution of those opportunities and ensure balance between an economically efficient and socially equitable allocation of educational opportunities. Whether that intervention takes the form of a grant or a loan, and whether it is paid to individuals, education and training institutions, or employers, depends on equity objectives, industrial development strategies and other policy goals with redistributional consequences.

EXPANDING AND IMPROVING MARKETS FOR EDUCATION AND TRAINING

There already exists in many OECD countries a fairly well-developed market for education and training, particularly at the post-compulsory level. There is a multitude of education and training providers that give the consumers, be they individuals pursuing their own development or employers trying to upgrade the skills and qualifications of their workers, varying degrees of choice with respect to field of study, quality of instruction, location, training content and cost. Part of it is dominated by higher education and advanced technical training institutions, in which tradition and established norms of educational development are as persuasive determinants of supply and demand as are the economic pressures for the efficient allocation of educational goods. But increasingly there is a market for the further education and training of adults that assumes greater importance as abrupt and dramatic changes in skills and qualifications requirements, shifts in the occupational composition of employment, and uncertainty about future developments have rendered obsolete the notion of initial education as in itself adequate preparation for a life-time career.

As further education and training of adults have become an economic necessity, enterprises and individuals alike have allocated economic resources to them and institutional arrangements for providing them have emerged. This market differs from that for more conventional post-compulsory initial education, however, in that demand and supply are not homogeneous. Rather, demand is highly differentiated depending on circumstances which vary from one work setting to another, as well as on the initial qualifications of the workers involved. The need is for a supply-side response that is similarly differentiated. This has occurred to a greater or lesser extent within traditional education and training providers and through the emergence of alternative providers, including enterprises themselves.

But the markets for further education and training of adults have been far from perfect. There are obvious cases of market failures — distortions in supply and demand leading to suboptimal allocation of resources and a lack of transparency in the opportunities available. There have also been market outcomes which, from a societal point of view, are not acceptable. Under-representation of low-skilled workers in further education and training or under-training by enterprises in declining sectors may be efficient by certain narrow economic criteria, but they may violate norms of social equity (and impose unacceptable social and economic costs in the longer term). Indeed, these kinds of market failures and market outcomes compel governmental intervention.

One obvious area for intervention is in the *financing of further education and training for adults*. Public authorities may find financial incentives necessary to ensure that small and medium-sized enterprises, as well as individuals (unskilled and semi-skilled workers especially) have adequate access to it. Even if the medium- and long-term economic benefits of further education and training clearly outweigh their costs to those enterprises, they may under-educate and under-train because the short-term direct and opportunity costs are prohibitive. This may be especially true for enterprises and individuals in declining sectors. Investment in further education and training in those cases can provide the basis for diversification into activities that are more economically viable or keep workers who are at risk of displacement from being trapped because of a lack of occupational mobility.

The precise form that financial incentives take may vary. One approach would be to establish loan funds to pay the initial costs of further education and training. Costs to enterprises and individuals could be spread as loan repayments over the period of time during which the benefits, in the form of higher productivity on task or occupational flexibility, for example, would be realised. In cases in which workers move to another employer before loans are repaid, the new employers or individuals could assume the costs or public authorities could absorb them.

Direct public support for further education and training is a more complex proposition. If it is provided as a free good, there is a risk of using it at levels in excess of what would be most effective; moreover, it may not necessarily be allocated to the firms or individuals that would benefit most from it, in an amount that would be most appropriate for their needs. Hence, publicly-supported education and training are probably best provided within a system of incentives and disincentives that favours economically efficient and socially equitable allocation of resources. If, for example, direct support to enterprises is restricted to education and training that is work-related, documented and transferable, the social welfare pay-offs will be enhanced. It might also be provided only where there is adequate consultation among the social partners

and labour market authorities so as to ensure that it is appropriate to labour market and enterprise conditions. Other forms of direct support — whether to institutions or individuals — should be conditioned on outcomes that are relevant to labour market conditions.

A somewhat different financing strategy would be to intervene in such a way as to encourage enterprises to treat further education and training more explicitly as part of their investment strategies. The objective would be to ensure that "human capital development costs" are treated in much the same way as physical capital investment costs. Putting the two on an equal footing would of course depend on specific national arrangements, particularly with regard to tax practices. It might involve steps to allow enterprises to depreciate education and training costs over the period of time in which it is useful, or to allow them to write off "investment losses" when employees leave before training costs have been amortised, or to ensure that investment incentives are "neutral" with regard to favouring one type over another.

Another critical area in which governments have traditionally intervened is in the *provision of information*. If markets are to operate efficiently and ensure an economically efficient allocation of resources for education and training by individuals, public authorities and the social partners, it is essential that reliable information be widely accessible regarding the cost, quality and nature of education and training that are supplied and consumed. Unfortunately, this is not uniformly the case when it comes to education and training provided outside the formal sector. Despite the growing acceptance of the view that education and training can be treated properly as an investment expenditure, it is virtually impossible with current national accounting conventions to measure the level of resources devoted to them by enterprises or private individuals. This makes it difficult, if not impossible, to evaluate the pay–off of expenditures on improving the workforce, relative to those on improving physical capital stock, thus risking inefficient allocations between the two. At another level, it is extremely difficult in many countries for individuals, enterprises, or even public authorities trying to refer persons for education and training to obtain information on the full range of opportunities available through public and private providers. Again, this creates a risk of misallocation of resources due to the purchase of inappropriate or unnecessarily expensive training, for example. In both cases inadequate information is the culprit. If the "human factor" is indeed becoming a more critical variable in economic activity, then indeed the process by which resources for improving the human factor performance are allocated must also be assuming more importance. It follows that it is essential that there be adequate information to measure, evaluate, and guide education and training decisions.

IMPROVING THE RECOGNITION AND TRANSFERABILITY OF COMPETENCES

One of the by–products of the proliferation of education and training arrangements — particularly those for adults — is that it is harder to evaluate

competences acquired by individuals. Part of the problem is related to the newness of arrangements: the relationship between skills and qualifications which they provide and those implicit in existing credentials are not necessarily clear. This confusion can be compounded to the extent that the relationship between inputs and outputs are not as predictable in the production functions embodied in evolving further education and training arrangements. Difficulties also stem from the variety of forms taken by further education and training. Much is highly specialised, enterprise–specific, even job–specific — one bit of a cluster of competences rather than a fully developed and recognisable skill. Even where they are not tailored to enterprise needs, they are frequently compartmentalised into discrete, free standing short–cycle modules whose relationship to one another is not always apparent or planned.

In and of itself, this rather *ad hoc* pattern of skill formation is not necessarily bad or inherently inferior to the more highly articulated structures often found in initial education and training arrangements. At least it lends a high degree of flexibility and responsiveness to the skill formation process.

It can however exact costs. For individuals, the absence of credible and transparent credentials for reporting competences and skills can limit the pay–off from further education and training, in terms of mobility and the ability to command a higher wage. Hiring costs for firms may be higher and the period of time required for employees to become completely productive may be longer insofar as firms are forced to rely on credentials that provide only rough approximations of capabilities. Of course, those costs may be more than offset by the fact that limited credentials simultaneously limit the transferability of qualifications acquired during employment. If undocumented qualifications are not transferable, they minimize the upward pressure on wages that might go with fully credentialled qualifications. This might be justifiable insofar as employers underwrite the costs of further education and training. But where the bill is paid by the public purse or is shared by employees, there is room for adjustment.

On balance, there is a compelling interest in at least asking whether a convincing case can be made in favour of a framework of standards for evaluating competences. In the context of a market for further education and training, the argument for such a framework can be based on the need for tranparent and credible information, for both suppliers and consumers. But that begs the questions of whether and how such a framework — which would not impose outcome objectives, but merely put in place an accepted taxonomy and measure for evaluating outcomes — could be made transparent, credible and, ultimately, workable.

At the very least, a framework of standards would depend on negotiated agreements between the social partners. It would require their consensus in its application because of its inevitable consequences for occupational placement as well as wages and salaries. More than that, a practical framework would need to be compatible with existing professional and trade certification and licensing practices, to say nothing of the need for some correspondence between such a framework and that in which more conventional credentials are awarded.

This is a formidable challenge. Skill formation is both more important and a more complex process than ever. Without some kind of common taxonomy and gauge for evaluating it, there is a danger that the market for further education and training will

be overwhelmed with *ad hoc* practices and that "shadow standards" derived from existing credentials will emerge. That, in turn, could aggravate the problem of "credentialism" in which certification requirements have little to do with *bona fide* skills and qualifications needs. The end result could be distortions in the allocation of resources for further education and training.

REFERENCE

1. OECD (1985), *Education in Modern Society*, Paris.

Part Two

PROCEEDINGS OF THE CONFERENCE

OVERVIEW

by
Colin Ball
General Rapporteur

For all those attending the event, engagement with the issues which were discussed at the Conference would have begun well before March 1988. The issues papers prepared for the Conference by the OECD Secretariat were designed to inform participants, to set out some, at least, of the principal themes and questions surrounding the subject matter of the Conference, and to stimulate discussion and debate. In essence the papers outlined a map of the territory of "education and the economy"; they identified and described some of the major known or suspected features of the terrain; and they suggested some of the questions, problems and issues that might be found in the less explored regions of the territory.

This overview is essentially based on the discussions during the opening session which capture much of the flavour of the subsequent more detailed discussions at the Conference.

Relationships under Pressure

Discussion of New Relationships between Education and the Economy in a Changing Society, the theme of the opening session of the Conference, began with what was to be one of the watchwords of the Conference, *change*. It provided the context for the other two watchwords: education and economy.

Taking up the theme of change, the *OECD Secretary-General* challenged the Conference participants to consider how education and training systems could better prepare persons to adapt to and manage a changing economic environment. But in so doing, he was quick to point out the constraints on those systems and their need to balance the social and cultural objectives with narrow economic ones, as well as to balance change and continuity, while accommodating the widening circles of employers, trade unions, public authorities, parents, pupils and others — each with a legitimate stake in what those systems do.

The *Conference Chairman* reflected on the implications of the changing environment for education and training. Accepting the point of view that "one has to reject arguments for 'sitting tight'", he highlighted developments in the Australian economy as a case of abrupt and dramatic change in competitiveness, creating a

demand for restructuring in public education and training institutions and policies and their role vis-à-vis employers and trade unions. Some of this restructuring is highly visible, as in the amalgamation of labour market, education and training functions in the newly-created Australian Department of Employment, Education and Training. Other elements affecting public-private relationships are more subtle. Mr. Dawkins, while acknowledging the uncertainty inherent in the particular course of action taken in Australia, stressed the unavoidable pressure for change and the urgency of public authorities acting together with the social partners and citizens.

Against this background of change and uncertainty, a number of major themes arose, some implicitly, others explicitly. Taken together, their cumulative message is that the challenge which is inherent in the catalogue of current and future economic and social circumstances for education, both at the level of policy and that of practice, and at all stages of education — initial, recurrent, and higher — is highly complex. Why?

What cannot be predicted...

First, this is because the way in which OECD economies and societies are changing is "unprecedented and *unpredictable*". It therefore follows that it is not possible either to plan or forecast, with any degree of certainty, what either the educational response or the educational contribution should be. Since we do not know what new economic or social circumstances will emerge, we cannot define what the educational response or contribution should be to those circumstances.

...and what can be

That said, there are, secondly, some general conclusions that can be drawn, with a great deal of certainty, about the implications for education of changing economies and societies:

- Since one major certainty is the continued existence of change itself, it follows that the content and methods of education — in the broadest sense — must be such that individuals are equipped with the flexibility and adaptability they require to cope with (at worst) or contribute to (at best) change.
- This, in turn, means that the ways in which education, again in the broadest sense, is organised and made available to individuals will need to change. In general terms, if education systems are to help individuals acquire not just the skills and knowledge, but also the qualities (such as flexibility and adaptability) that they need in changing societies, they will need to possess precisely the same qualities themselves.

In other words, the role of initial education, and the priority and resources attached to recurrent education assume added importance in a world in which continuous relearning and skills updating will become not just desirable, but vital, both for societies as a whole, and the individuals who comprise them.

The overlap increases...

Thirdly, the challenge and complexity inherent in educational change is heightened because the "overlap" between education and the economy is only partial: education serves more than economic objectives, while at the same time, it is only one of many factors influencing economic performance.

In the current climate of change, the "overlap" — the interdependency of education and economic performance — is increasing. There are a number or reasons for this. Economic performance, productivity and competitiveness both in manufacturing and service sectors, and both in enterprises and institutions and in society as a whole, are increasingly influenced by the *quality of the human resources they possess*. "Quality" means high levels of skills and knowledge, and of attributes like adaptability, flexibility, creativity and responsibility, in the workforce and population. In addition, the ability of individuals to master new technology and to be creative and innovative enough to formulate and advance new ideas will be a further important influence on the economic competitiveness of enterprises, institutions and societies. Reciprocally, the ability of individuals to contribute to, and benefit from society, by playing an active part in it (whether they are working or not) will be determined by the levels of skills, knowledge and personal qualities they have. In part, the increasing interdependence of education and the economy, in societal terms, will be manifested in an increasing independence on the part of individuals.

This overlap is further expanded as employment becomes less and less the *sine qua non* for "active life". Widespread and chronic long-term unemployment in many OECD countries, and longer life expectancy beyond retirement have raised to high, nearly unmanageable levels, the financial dependency upon the working population while creating a large class of persons whose self-fulfilment depends on more than the passive receipt of transfer payments. This means that educational preparation for an active society needs to be much more than simple preparation for working life. As more emphasis is given to getting as many people as possible into an active role in society and as definitions of "active life" extend beyond paid employment, it is conceivable that education and training can become a positive supplement, if not alternative, to income maintenance and/or a bridge to labour market or other socially desirable activities.

...but who decides and who delivers?

Fourthly, as if all the difficulties and contentious issues contained in the foregoing were not enough, a further challenge concerns both the *locus* of educational policy-making and resourcing, and the *location* of educational delivery. Who is responsible for the planning, design, resourcing and delivery of education?

Human resource development already takes place more and more in the context of labour market programmes and in education and training provided by enterprises and trade unions. This is not to substitute for or displace that done in the "formal" education sector, but to complement it, to adjust to rapid shifts in skill and qualification requirements in the labour market, and to a heightened sensitivity to educational deficiencies.

As these trends in the locus of responsibility and the provision of education develop, many questions arise. What should be the division of effort? Who will do precisely what among the various public, private and other agencies involved? Who should bear the responsibility for ensuring balanced and equitable provisions, so as, in particular, to fill gaps? How, if the actions and provisions of all the varied agencies were to lead to what might be termed an "education and training market", could the situation be avoided wherein those most in need (such as, for example, the long-term unemployed), but most expensive to cater for and difficult to reach, are poorly served by the market, and thus further marginalised? What can be done to resolve the deep

differences in perspectives and time horizons (in terms of the time taken for an education/training "investment" to produce an economic return) of the different players?

Another problem arises when providers of education and training proliferate, at the same time that new skill and qualification requirements are emerging. How can arrangements be made to validate qualifications in some coherent way, so that they are transportable?

Higher Education

Fifthly, it is evident that the higher education sector faces not only many of the foregoing challenges that apply to the fields of initial and recurrent/further education, but some other distinct challenges peculiar to the process of generating and imparting knowledge. This is especially true with respect to the need for narrowing the historically wide gap that exists in many countries between industry and university-based research, and in improving the pace and effectiveness of knowledge transfer.

Within this general challenge for higher education, there are many specific issues. Technical and structural change implies, for higher education institutions, an increased output of highly-skilled scientific and technological personnel. But the unpredictable and unforeseeable nature of the changes — *and* therefore of the demands they create — and the inevitable time-lags involved in educational responses to new demands do not make it easy for them to be accurate, or timely. In addition, as in initial education, there is the danger that increased emphasis on the vocational side of higher education, in response to economic pressures and changes, could threaten the need for the ideals of liberal education, and academic "freedom" in the broadest sense. Likewise, as in the field of recurrent/further education, as links and partnerships develop between higher education and the private sector, whether of a financial or technical/scientific nature, there will no doubt be tensions. These will be about time horizons, about the balance to be struck between basic and applied research, and between the arts, humanities and social sciences, on the one hand, and science and technology, on the other.

The Key Issues

While the opening statements of the Secretary-General and the Conference Chairman staked out the ground that was to be covered at the Conference itself, it fell to the three distinguished speakers who addressed the first session of the Conference to examine this ground from three distinct perspectives, that of an education politician (Bertel Haarder, Danish Minister of Education); an industrialist (Akio Morita, President of Sony Corporation); and a Trade Unionist (Roy Jackson, Assistant General Secretary, British Trade Union Congress). Between them, they highlighted a number of major issues and questions, and identified, within each of them, where both differences of opinion and consensuses might lie.

What do we mean by education? How is the definition changing? What kinds of qualifications does the workforce need?

As noted above, economic performance is increasingly influenced by the quality of the human resources available to society as a whole and to its component enterprises and institutions. Thus, the production of such "quality" must be an important goal of education: but what, then, is meant by "quality"?

Bertel Haarder was the first of many at the Conference to elaborate on this theme, which was to be one of substantial consensus at the Conference, reflected in the Chairman's concluding statement. In picking up on the theme, Bertel Haarder first reduced it to its essentials. What the definition of the function and purpose of education now is, he said, is to improve the "personal as well as vocational qualifications" of individuals, through a balance of general and vocational education. Perhaps with an eye on those who might feel that there is nothing new in such a statement of objectives, and that this is what education has always been doing, Bertel Haarder pointed out that in many countries there is no longer an "industrial" economy, where the function of education was, in essence, to produce a large mass of homogeneous worker/functionaries. Modern societies are already, and will increasingly be, much more differentiated and heterogeneous. The trouble is, he said, "Education is still serving the old industrial society".

Bertel Haarder's point then was that education systems had, at least in recent years, perhaps gone too far in the direction of according time and priority to what some people at the Conference termed "narrow, functional vocationalism", or in tilting the balance too far on the vocational side at the expense of broad–based general education. *Roy Jackson* agreed, and he too spoke of the need for a "broad and balanced" education which would improve the value and quality of human resources. "We do need", he said, "to be constantly investing in new, more efficient, better quality tools, but we have to remember that, no matter how advanced those tools might be, they still need users.. someone to programme and install them; someone to monitor and control them; someone to mend and maintain them.. it is the quality of these workers that can make a difference in a nation's competitive edge". And besides, he said, it is not just societies and economies that benefit from high–quality human resources. Individuals, too, want such quality, for "... working people want investment in their labour to get the best return for them ...".

For Roy Jackson, a "broad and balanced" curriculum should include, but not be dominated by, vocational content. The latter was important in the vital business of motivating the "customer": "I think far too many young people are turned off by schooling, by a curriculum that is narrowly compartmentalised into subjects that appear to them to have very little relevance to the real world".

Akio Morita took up the point, indicating that "general" education was not a vague euphemism for "academic" education. When recruiting employees to the Sony Corporation, he said, "... it doesn't matter to us whether a person has graduated from a prestigious university or not. We are looking far beyond this kind of detail ... We are looking for evidence of sincere dedication, enthusiasm for ideas, for people, for *life*, and a certain amount of discipline...". Although he referred both explicitly and implicitly to personal qualities like adaptability, flexibility, creativity and responsibility as being important objectives of the "general" component of education, he added others: the ability to know *how* to learn, and to be willing to learn and relearn constantly. As he put it: "We must teach ourselves to be agents of change. That

requires a lot of creativity and courage, for each day is an educational experiment and experience ...".

With these remarks, the Conference moved beyond the comfortable consensus view about the need for balance, and for an important goal of "general" education to be the development of personal qualities. If "learning to learn" was important — indeed one participant suggested that perhaps this was all that initial education should seek to achieve — was all the effort made in recent years to improve the "quality" of education by curriculum change perhaps rather misplaced? Should we not be looking at the development of new educational methods? While some participants felt that general education towards "personal development" simply needed to be included in the "core curriculum", there were many other, widely divergent, views. Surely behavioural qualities and attributes cannot be taught at school, suggested one participant? Quite so, said another, so should not schools, therefore, stick to the cognitive and leave the affective for others to attend to? Akio Morita added a slightly different view. "You don't learn these things at school," he said, "they are part of your character".

Reconciling continuity and change

Behind this discussion about how the content, methods and purposes of education need to be shaped to the needs of changing societies lay a sense of unease and discomfort among a number of participants. These expressed views about the need for another balance, between continuity and change. While education must clearly help people acquire the personal qualities and attitudes they need to cope with and manage change in rapidly-changing societies, it was stressed that the other function of education — to provide continuity and stability — must not be lost. Even such a proponent of the virtues and necessity of change as Akio Morita accepted the need for this second balance. Continuity and flexibility should go hand in hand, he said, and both are needed for living and working. The flexibility which change requires is in the mind, it is about attitudes. Continuity is required by tasks, by systems and by projects.

Thus, around this consensus about the central question of the definition of education, there were problematic and unresolved issues. Overall, this was one of the stimulating aspects of the Conference, the surest sign that it got beyond the comfortable, even platitudinous, generalities upon which all present felt they could agree, into at least exploring, less comfortable specifics. Even highly controversial matters were aired. For example, on the subject of continuity it was *Bertel Haarder*, Minister of Education, who reminded those present that while one function of education is to improve personal and vocational qualifications, "... a second function is to keep children and young people occupied ... off the streets and away from the labour market ... to keep all young people occupied until they are 20 or 22 or 23 ... not so that young people would be more clever, but that they would reach an age where they were more stable, where most of them were married and would not have to move around too much ...". While this comment was left tantalisingly undiscussed, he followed it with another question, put in equally controversial, blunt terms, to stimulate discussion.

Where should education take place?

"This may sound a little revolutionary" he warned: "... it is possible to learn something without being taught". Borrowing from Ivan Illich's book *Deschooling*

Society he added that "it is a very important statement,... for instance you can learn something while having a job." And he went on: "... perhaps in many areas we specialise education too much. We say that "education" is when you go into a classroom, where there is a teacher who stands before you, and tells you the 'truth' about this or that. This may not be the right way to do it. I think there must be much more interchange between theoretical teaching and what is done in practice. So on-the-job training is the keyword...".

Roy Jackson no doubt had in mind the fact that vocational training is, in major part, provided on the job when he stressed its motivational value. But here *Bertel Haarder* was developing another point: "the reason why we must make employers responsible for education: we must make it a habit that employers spend money on education and that they do it while being very conscious of getting the most out of what they spend".

Akio Morita devoted a good deal of time to describing how Sony had embraced this "habit" and to showing what result this had had in practice. "Education", he said, "plays a central role in the success of my company, or any company." As he developed his theme, and as others contributed to it, what became apparent was that the last three words of this statement represented a rather over-optimistic claim. After all, an entirely different claim had been made earlier, to the effect that unlike public authorities, which are prepared to take a long-term view about the flow-back of benefits from educational investment, companies tend to expect more immediate returns. *Roy Jackson* added that while employers who take training seriously, and fund it adequately, exist in every country"... there are a vast number who do not ...".

Why not? Two contributors to the discussion following Bertel Haarder's presentation put flesh on the bones of an answer. One representative of an employers' organisation suggested, bluntly, that the business of business is business, not education. Why should business be expected to shoulder the burden, he said. A second pointed out that while large corporations like Sony could take the long-term view and could afford to make investment in workforce education and training, small and medium-sized enterprises could afford neither.

In this light, *Akio Morita's* account of the role of the company in education and training has to be regarded as an exemplary account, rather than as a "typical" one. As he put it himself, "... We have good reason to believe that the people we ask to join us will be with us for 20 or 30 years ...". Yet, how many companies in a changing society would set themselves such a standard? And how many Corporate Presidents would say: "... we see ourselves as a kind of university where we can learn by doing. The difference between us, and the Sorbonne, say, is that we must make our curriculum up as we go along... We survive in the face of our competition because we know that we can only be successful if we are constantly moving on to new areas of exploration. For us, if we are content with things as they are, our enterprise will fail. Stagnation leads to failure."

Can education learn from industry?

Perhaps there was a lesson here, from industry to education, about the questions surrounding not the purpose and definition of education, but about its methods, structures and environments: if flexible and creative individuals were required, then surely the nature of the environments in which they learn need in themselves to be similarly flexible and creative? Other lessons followed in Akio Morita's presentation.

What of the role of the teacher in industry — or at least in Sony? To Akio Morita, this meant talking of the role of managers, whose job it is "to create an atmosphere in which people can learn, an atmosphere which engages their creative instincts, an atmosphere in which they can be truly productive." Was this not a clear message to the teaching profession? And was there not another in what Akio Morita said about personal and workforce development?: "... usually we keep a person in a particular job for no longer than three years or so. After that he or she is moved to new duties in a new section. This is done very much with an eye to expanding our people's professional horizons".

So Akio Morita was doing more than setting an example to other companies. Adding fuel to the earlier discussion on definition, he was conveying ideas and lessons about methods and pedagogy to all educationalists. As he put it, "our ideal is that everyone should know everything about everything." When set alongside Roy Jackson's earlier point about motivation, these were powerful messages from both sides of industry to educationalists.

Initial and Recurrent Education

Whereas the discussion about the definition and purposes of education had, as one might have expected, focused upon initial education, the discussion about where education takes place focused largely upon post-compulsory and continuing education. Beyond the theme about private sector-located education and training, two others emerged. The first was the notion of the emerging "education and training market" of further and recurrent education opportunities. *Roy Jackson* was the only speaker during the opening session to point out that the "market" here consisted of more than public sector continuing education services and in-company training. He spoke of the growth of government-financed labour market programmes, largely orientated to vocational training, for young people of post-compulsory age, and mixtures of temporary work, training and counselling for adults, and especially the long-term unemployed. Such programmes occupy an important place in the market of further education and training opportunities. These programmes, which have existed in most OECD countries for many years now, bring another party into the market of educational provision: government Ministries of Employment and Labour. Such new provisions, and the new parties financing them, bring other concerns and issues into the question *who provides?* for, as Roy Jackson pointed out, there are moves, evident in a number of OECD countries, to enforce attendance on them by the unemployed by threatening the removal of benefits for the non-attenders. He made his views on this matter perfectly clear, by asserting that "... where such schemes are based upon compulsion, forcing unemployed people to work or train in return for low income support, they are totally unacceptable, blaming the victims of unemployment for their predicament." He added: "... compulsory training is also bad training."

The second theme amounted to another question of balance: in changing societies does a new balance need to be struck between initial education, on the one hand, and recurrent education, on the other? Presently, even when the relatively new post-oil-shock post-compulsory vocational training schemes for the young unemployed are taken into account, the balance of educational expenditures and priorities is weighted heavily in favour of initial education: on schooling. As with the other questions of balance discussed, the general feeling was that the initial/recurrent

balance needed to change to reflect the new situation, and indeed was already changing. But again, there was no cause or justification for extremism. Education is less synonymous than ever with schooling, in circumstances where individuals will need to learn and relearn continuously, throughout life. But as to what importance educational policy-makers should attach to schools, *Bertel Haarder* had, again, some challenging views. He developed the idea of the "threshold". Up to a certain point, he said, investment in education can bring economic returns. But beyond that point, that threshold, increased education expenditure does not necessarily yield returns. Relating this more specifically to his comments about "de-schooling" he expressed the view that there is a threshold beyond which allocating additional educational resources to expanding the role of schools and the tasks of teachers does not necessarily bring returns, either in the form of economic advancement or in other forms.

As with other topics, there was thus a comfortable "core" consensus about the various issues related to the provision of recurrent education, but there were also some less comfortable questions and unresolved issues surrounding them. In general, the consensus was that the responsibility for the provision of education and training opportunities rests with both public and private sector bodies. Varied styles, types and locations of offering are, broadly speaking, a good and necessary thing. But what about companies which do little or nothing? What about the danger inherent in the schism between enforced, cut-price public sector education and training for the unemployed, on the one hand, and a combination of voluntary, expensive publicly-financed higher education for the academic elite and private-sector financed recurrent training and development for those working in large companies, on the other?

Responsibilities: Who controls and manages the market? Who pays?

Roy Jackson spelled out his views on control, management and, by implication, finance. "I am certainly not seeking a command economy, or a "nanny-State", but governments are the first of many with responsibilities, and theirs must be the overall responsibility. Only they have the resources and the breadth to lay the foundations of a modern, flexible and progressive education and training system". As far as education and training are concerned, he warned against any temptation of talking of the "free market"; he claimed that somebody must be in charge, and that somebody must inevitably be government.

Bertel Haarder strongly disagreed, arguing against the tendency to ask the government to solve the problem of skill shortages and to ask for a ready-made labour force so that employers do not have to wo[illegible] about education and training themselves. Education ministers in a modern society must work to keep employers responsible for re-education. "We must tell them that in their companies and firms, they must create what I would call an education culture, so that it becomes a normal feature that if someone needs qualifications, it is the responsibility of the company to provide".

In addition, Bertel Haarder raised a further controversial issue by pointing out that "government" is not necessarily going to manage, control and allocate resources in a manner which is in the best interests of all citizens. Government policies and priorities can, he pointed out, be distorted by the actions of strong interest groups. He noted that in some OECD countries there is the apparent paradox of skill shortages and unemployment existing side by side: a symptom of an inflexible labour market, and/or of an inefficient education and training system, or both. Why can we not increase

flexibility by educating and training the unemployed in the skills they require in order to fill the vacant jobs, he asked out loud, perhaps with government, as *Roy Jackson* would suggest, taking the lead? His answer was that it is not that easy, "because education and the credentials it bestows upon individuals serve not just to signal competences that people have acquired, but also act to keep other people outside of your area". In some areas this phenomenon may be justifiable. "Doctors, lawyers, and others, may say that it is necessary because otherwise we would have half–educated doctors, and none of us would like to be treated by a half–educated doctor ... but other groups are exploiting that argument far more than is reasonable; they build up barriers and they even make laws, agreements, stipulating that everyone occupied in their area should have a particular education. Now this certainly does not create flexibility. Often there are people outside who have real qualifications that are just as good. But they do not have the formal qualification and, therefore, are kept out. The strong interest groups want them to be kept out".

As if anticipating a later question on whether, by "strong interest groups" he was referring to either trade union or private sector interests, or some combination of both, as in the case of the "professions", *Bertel Haarder* went on to cite the teaching profession itself as a specific example. In Denmark, he said, "I have raised a debate concerning who should be allowed to teach in schools. After all, many people have high qualifications even if they never went to a teachers' training college. Should they be allowed to teach children? The parliament says no, the Teachers' Union says no — not for the sake of the children, but simply because it is more secure to know exactly who is going to be allowed to teach...".

This sceptical view about the powers of government was disputed, by implication at least, by Roy Jackson, and rejected entirely by another participant — himself a Minister of Education. Pressures from interest groups are inevitable, he claimed, but they are only negative or likely to distort priorities when governments give in to them.

While he accepted that employers should play an important role in providing training, Roy Jackson was concerned, as noted earlier, that many companies simply do not provide it. Thus, he was quite clear in his view that "... Governments have to be responsible for an adequate public education and training infrastructure. I think it is nonsensical to believe that all the training that is needed can be done in–house and on the job ... Too many governments are cutting back expenditure on public education and training, when, in terms of the economic problems we face, they should be increasing it in real terms". So the role of government had to be a major one in this emerging market place. Otherwise, Roy Jackson went on, if this notion of the "training market" were left uncontrolled and unmanaged, "the alternative, which it seems some people are actually promoting, is a polarised world economy, with very few highly–skilled, highly–paid people, and hundreds of millions of people with low or no skills, and continuously, or regularly, unemployed".

Rights: How can the take–up of education and training be ensured for all individuals?

Roy Jackson extended his view about the primary and vital role of governments further, calling for government measures to grant "legal rights". He was sure that "we can change what the market provides, particularly by providing more rights to individuals: the right to a certain quantity of training ... a right to a training allowance or grant; the right to undertake such training ...; the right, also, to be consulted about

what training would be most effective; and the right to nationally and internationally recognised standards of training". Such an approach, he said, underpinned by legislation and delivered jointly by employers, unions and trainers, "would provide a flexible and adaptable system, responsive to the needs of individuals, as well as responsive to economic change".

This was therefore a plea, albeit one not discussed in any great detail during the Conference, for influencing the "market" by giving more muscle to the consumer.

But even if they were equipped with such rights, how can one ensure that the consumers make use of them? *Akio Morita's* experience in the Sony Corporation suggested part at least of the answer. He stressed that while his job is "to direct the fortunes of one hundred thousand people", he described these people not as employees, but rather as people "who are associated with me in our world-wide enterprise. Together, we develop new electronic products ..." And he went on: "I like to say that a company is a 'fate-sharing body'. We are all in the same boat. If the company does well, we all do well. If the company runs into trouble, we must bear the burden *together*. There is something of a family dynamics operating, I think".

Akio Morita's point was clear. In Sony the responsibilities of management to make education and training available to employees are welded to, and made almost inseparable from, the rights of the employees to develop their skills and knowledge, by the common recognition of "fate-sharing". Can such an approach be developed more broadly in society as a whole?

Making Qualifications "Transportable"

Discussion about the emerging "education and training market" raised questions and issues not just about the balance to be struck between governmental responsibilities and company responsibilities — for control, management, delivery and finance — but about another equally thorny topic. With many providers operating in the market, the issue is: how can one ensure that the qualifications bestowed by one provider are recognised and accepted universally? This is therefore an issue which encompasses standards, and the approval and validation of training and education and of the qualifications issued. It was, as will be evident from the report of the Working Group on Further Education and Training of Adults, an important issue, but in the opening session only *Roy Jackson* referred to it. He expressed, however, what appeared to be the general view when he said that the field of ensuring transportability of qualifications was "a jungle we urgently need to reform". And, in keeping with his earlier remarks about the role of government, he added "... what we need in every country, and, indeed, on an international level, is a coherent system of qualifications ... Central governments must take the lead, and support industry and educational bodies to establish such a structure".

New Challenges for Higher Education

Nowhere in the education system is the so-called "resource squeeze" more apparent than in the higher education sector, where three effects are obvious.

First, while the fact that institutions of higher education — and universities in particular — cannot count on any increases in public funding in the foreseeable future

is causing them to look very critically at how better to utilise existing resources, it is also causing them to look for other sources of finance. In particular, they are looking to the private sector, and to some, such as *Roy Jackson*, this could mean a loss of the higher education sector's cherished independence. Trade unions, he said, "will continue to maintain the case for higher education to remain independent, guided by government, responsive to industry and other interests. But no single interest can run higher education on its own, and a system run by businessmen would have just as many faults as one whose priorities were dictated solely by academics".

Secondly, as in initial education, institutions are having to rethink their priorities. Should they be providing the higher education equivalent of "general" education or of "vocational" education? Have they perhaps gone too far in recent years in the promotion of the latter at the expense of the former? Should not graduates know how to learn and how to think creatively? Does not over-specialised professional and vocational study inhibit both? *Akio Morita* was clear about his own view on these questions when he said that in his own company "the R&D staff must be flexible, like all good scientists. They have to be prepared to alter their research plans in order to pursue a new possibility ... and in applying new technology to produce new products. It requires imagination, flexibility of mind, to produce a product which is simply a variation of another product." By way of example he described the origin of what is Sony's most famous product: "Some people say that the Walkman was a great technical breakthrough. It was not. Every bit of technology used by the Walkman was already available, but being put to other uses".

Thirdly, institutes of higher education have always had to strike a balance between servicing the existing economy and labour market, and advancing knowledge through research. Resource constraints may affect this balance, not just by leading to less money being available for research in general, but especially affecting the pursuit of those forms of research which are long-term or highly speculative.

These three issues, like other changing balances, were recognised and discussed by participants. The consensus was that, once again, extreme swings of priority were to be avoided. The increasing involvement of, and relationship with, the private sector in higher education affairs and activities was no bad thing, provided, as *Roy Jackson* had suggested, the result was not loss of independence or universities serving the narrow objectives of industry alone. A better and more appropriate balance between vocational and professional functionalism and general "liberalism" was, as in initial education, also no bad thing, but again extremes had to be avoided. The same applied to the research/service balance.

But the comfort of such consensus was also shaken by a fourth issue raised by *Roy Jackson*. He reminded participants that many young people and adults — employed and unemployed — never enjoy the privilege of access to higher education. "Higher education", he said, "must become more open, reviewing its entrance requirements, taking account of experience, as well as qualifications".

Conclusion

From this general discussion, well served by Bertel Haarder's willingness to provoke, by Roy Jackson's championing of the rights of individuals, and by Akio Morita's modestly-stated challenges, the Conference moved on, to consider in more detail the implications of change in society for each of the three sectors of education

— initial, further, and higher. But this opening session had made palpable progress. In particular, it had identified many areas of consensus, especially in recognising that change in society is not causing, and should not cause, wholesale and sudden shifts in educational policy and practice, but rather, changes in educational priorities, emphases, and balances.

REPORTS OF THE WORKING GROUPS

INITIAL EDUCATION AND TRAINING, AND PREPARATION FOR WORKING LIFE

with
Mr. René Monory
Minister of Education, France

and
Robert Carneiro
Minister of Education, Portugal
Working Group Chairman

SUMMARY OF THE WORKING GROUP DISCUSSION

by
John Lowe, Rapporteur

The discussion centred principally on six main themes:

i) The linkage between the general aims of education and training and economic needs and priorities;
ii) The necessity of responding to emerging concerns in contemporary societies;
iii) The need to redesign the curriculum with the future in mind;
iv) The commitment to providing equal opportunities for all without sacrificing diversity;
v) The problems surrounding the transition from school to working life;
vi) The effective use of human and material resources.

Linkage between General Education and Economic Needs

The group concluded that the linkage between education and the economy concerned virtually the entire cycle of initial schooling. At the elementary or primary level, values and attitudes were already being formed and young children could become aware of simple economic realities and begin to relate to their external environment. At the lower secondary level, which corresponded with the second

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major phase and end of compulsory schooling, the importance of the linkage steadily increased. At the post–compulsory level, the linkage was all–important for most young people.

It was a question, therefore, of ensuring continuity from the beginning to the end of initial schooling, while making the linkage progressively more explicit both as regards subject matter — learning, for example, about how wealth is created — and the amount of time and effort allocated to it in the curriculum — for example, learning about the world of work.

The group also agreed on the necessity for the young to develop a sense of values and independent minds from an early age. They should learn: how to reason for themselves; how to make judgements; how to take decisions; how to work conscientiously; how to interact socially with others; how to become responsible citizens.

Schooling had several goals and was driven by its own momentum. The goal of relating to the economy was only one of them. Indeed, a few delegates wished to stress that there should not be undue emphasis on economic requirements. The *BIAC delegate* argued that school–leavers should have acquired the understanding, qualifications and intuition that would enable them not simply to react to, but to act upon, the conditions of the workplace.

What all young people merited was a broad general education of a high standard — a very strong basic education, said the *delegate of Italy* — not only up to the end of the elementary cycle but up to the end of the lower secondary cycle and even beyond.

There was strong support for the idea that, throughout initial education and training, the curriculum should be perceived as a whole. The historic demarcation line in many countries between general and vocational education is becoming blurred. *In Austria* and *Germany*, it was pointed out, general and vocational education had traditionally been treated as complementary. Almost everywhere, general education is now seen to comprehend vocational education. By the same token, vocational education is being less and less identified with a narrow skills connotation and narrow instrumentalist objectives. Employers, no less than educators, increasingly perceived the principal aim of initial education as turning out young people with all–round knowledge and skills in order to equip them to be flexible and adaptable within jobs, and mobile between jobs.

It was an encouraging sign of the times that schools were breaking out of their time–honoured isolation and establishing relations with local enterprises and communities. At the same time, that trend should not be construed, in the way some liked to think, as a move away from an unreal world towards a real one. Schools were already very real worlds, as the *delegate of the United States* insisted.

As schools were opening out, so was the world of work, which had been equally guilty of isolationism in the past. Some employers now wished to make their views known on the content of the school curriculum. However, too many institutional rigidities remained on both sides.

Several delegates described the linear chain of initial schooling in their countries and, in so doing, confirmed that the period of compulsory schooling is today dedicated to the pursuit of a good, general basic education for all. The period comprised six to eight years according to the country in question.

After compulsory schooling, the common purpose was to consolidate the basic education already acquired, to introduce a vocational orientation in the first year, and thereafter to provide more intensive technical and vocational education.

Emerging Concerns

The group identified five emerging concerns that must be taken into account before redesigning the curriculum:

i) The need for greater economic relevance;
ii) The new emphasis on human development;
iii) The process of rapid internationalisation;
iv) The growth of multicultural societies;
v) The impact of new technology.

On *economic relevance* the group felt that, on the one hand, the demand for highly-skilled manpower was increasing, and that, on the other, the shift from the industrial to the service sector would continue. In many areas, old industries were running down while elsewhere new enterprises were emerging that called for newly trained manpower. The message for education and training was that young people must be better qualified than ever before and sufficiently rounded and adaptable — "men and women for all seasons" — to fit into emerging occupations. Programmes and courses must train for the future and not for obsolescence.

Education had always been fundamentally about *human development*. Today, however, because of the uncertainties of the future and because of changes in the patterns of work and leisure, it was imperative to help young people cultivate independent and vigorous minds so that they could cope with omnipresent change and make both their work and their leisure rewarding experiences.

Internationalisation was increasing apace as countries were becoming more and more interdependent on one another. Occupational mobility across countries would soon become commonplace. Pupils had to be prepared to become citizens of the world as well as good citizens in their own countries.

A particular manifestation of the internationalisation process was the emergence of so many multicultural societies; according to the *delegate of Denmark* we would all soon be "migrants". This gave rise not only to general adjustment problems between cultural groups, but to specific learning difficulties for the children of minorities — the delegate of Luxembourg mentioned the example of Portuguese migrants in his country. In turn, failure to deal with these difficulties led to labour market problems.

Economic interdependence, occupational mobility across countries, multiculturalism, internationalisation — all these factors pointed to the critical importance in the modern world of the mastery of foreign languages.

Technological change had always been with us. There were, however, some distinctive features of the present age, notably the exponential spread of knowledge and the widespread utilisation of computers. Young people had to be mentally equipped to understand the uses of new technology and, where appropriate, professionally equipped to use it in their chosen occupations. In a word, they must all be "technologically literate". Fortunately, young people readily took to new forms of production and communication provided they were given sufficient exposure to them.

The trouble was that too many of their elders, including some teachers, were resistant to technological change.

Redesigning the Curriculum

While agreeing on the wisdom of redesigning the curriculum in the light of actual and anticipated societal concerns, the group called for flexible and adaptable strategies, seeing that the future was so uncertain. That uncertainty surrounded not least the condition of national economies. Societies evolved in ways too complex and unpredictable to permit accurate forecasting. If some factors affecting education and training were predictable over the short term — population trends, for instance — much contemporary change was as unexpected as it was sudden. The necessary conclusion was that young people should be equipped with the kind of forward–looking understanding and skills that would enable them to cope with any fresh challenge both as citizens and employees or employers. They must also know when to resist undesirable changes.

The discussion on the curriculum that followed took for granted the need for a core curriculum accessible to all covering the greater part or entirety of compulsory schooling. Several delegates referred to the "strategic" concept of basic competences. These included the ability to collect and interpret key information for specific purposes, to see relationships between different phenomena, and to communicate effectively both orally and in writing.

The group also agreed on the value of an interdisciplinary approach to teaching and learning. The traditional breakdown of the curriculum into discrete subjects created a barrier to the understanding of complex phenomena. There was also support for the idea of science and technology permeating the whole curriculum from the elementary to the post–secondary cycles.

The difficulty of reforming the curriculum had, nevertheless, to be faced. The central question was how could the prestige of the subjects in the traditional curriculum be challenged so that new subjects, the acquisition of multidisciplinary skills and competences, and opportunities for work experience and career guidance, could be properly catered for. How could any subject that was not examined and certified be taken seriously? The attitudes and prejudices of schools, teachers, parents and the students could not be easily changed.

The reality remained that it was imperative to revamp the entire curriculum so that it might respond sensitively to new priorities. For instance, it was essential to revalue and fully integrate work experience and career guidance programmes. A suitable place had also to be found for training in the use of computers.

The group considered what specific understanding of and exposure to working life young people should experience during the lower secondary cycle. It was pointed out that in *Germany* pupils at this level were expected to learn how companies and work committees are organised and to be introduced to such matters as consumer affairs.

Given the emerging concerns already discussed, the group attached special importance to the provision of adequate foreign language instruction. This was crucial not only because of the increasing multilingual diversity within countries, not only for better international understanding, but also to enable countries to cope with the interpenetration of enterprises and trade and the increasing intensity of international economic competition. The immediate difficulty, however, was how to find more

room in the curriculum for modern languages. Would other subjects have to be dropped or curtailed?

Schools, teacher training colleges and teachers were criticised for being slow to adopt the most recent technology and know-how. Given present work loads, organisational arrangements, and established aims, however, it was not easy to integrate new technology as a regular component of curriculum development and teacher training.

There was no doubt that the motivation of teachers was the all-important factor when it came to adopting innovations. In the last resort, no pedagogical or other reforms were possible unless teachers and trainers were professionally equipped and motivated to manage change. The group placed a high premium, therefore, on in-service training.

With regard to that, the group felt that far too little attention was being paid in most countries to the training of trainers, especially those based in enterprises. There was an urgent need for the systematic and large-scale provision of suitable continuing professional education.

The *TUAC representative* was at pains to stress that teachers' unions were not responsible, as some alleged, for arresting progress. Their members were simply kept too busy by such exigencies as excessive teaching loads and unfavourable pupil/teacher ratios.

The group emphasized that effective instruments of curriculum appraisal at all levels were required in order that education and training programmes might be properly monitored and kept up to scratch.

The Crisis of Low Educational Achievement

The group concurred that the gravest of all the challenges facing education and training providers was the plight of low achievers. In all countries many young people did not learn enough. Some left school even before it was legally permissible and others attended irregularly. At the end of compulsory schooling many leave the education and training system forever. One delegate stated that some school-leavers at sixteen had a mental age of twelve.

The great majority of low-achievers lived in areas where there had been economic decline and where social deprivation was widespread. The *delegate of Canada* said that it had been possible in the past to tolerate some degree of educational wastage if only because labour markets were providing sufficient jobs to alleviate social disaster. This was no longer so. To turn out young people from compulsory schooling without an adequate mastery of basic learning skills and the values and attitudes needed to perform a useful adult role was to condemn them to a lifetime of dead-ends and personal frustration and to foist on society endless costs in the form of remedial expenditure.

It was doubtful whether low-achievers could be significantly helped simply by modifying the existing curriculum content and organisational arrangements or even by introducing new technology. The *delegate of Switzerland* said that since many of them hated school it was pointless to try to retain them after the end of the compulsory period. Other delegates counselled against dead-end training schemes out of school.

The solution must lie in introducing diverse teaching and learning strategies and methods and, where appropriate, different settings, in addition to substantive

curricular reform, in order to serve better the full range of student needs. New instructional technology could be usefully deployed to help diversify the repertoire of teaching and learning techniques. Whatever was done for low-achievers within the mainstream of education, it would probably always be necessary for some to resort to remedial and safety-net programmes following school.

Helping under-achievers to do better in no way entailed penalising average and high-achievers. The objective was to raise educational standards for all. Several delegates, including the *delegate of the United States*, referred to the value of mixed ability classes where low-achievers improved their performance and high-achievers flourished.

Transition after the Compulsory School

The stresses and strains of the transition from compulsory school to work or to further education and training had been alleviated in recent years, but many problems remained. One was the tendency of many young people to lose interest in general studies too soon and to look for any kind of job on leaving school. Experience showed that the choice of a job should be delayed as long as possible and that no choice should drive a young person into a blind alley. The longer the delay, the greater was the opportunity to mature and to have a wider range of choice.

The *delegate of Finland* returned to the problem of those who disappeared completely from the education and training scene after compulsory school or who dropped out subsequently before obtaining any qualification. What was to be done for them? The *delegate of Sweden* said that the strategy in his country was to try to reach everyone in the age group.

An outstanding problem was that in many countries the opportunities for further education and training were a veritable jungle. Measures to integrate and rationalise the provision were required. Several delegates stressed the absolute necessity of establishing and maintaining close contacts between schools, colleges and training workshops, on the one hand, and enterprises on the other.

The *delegate of Sweden* described how in his country the post-school provision was organised in modules or "slice by slice". The *delegate of Japan* said that the provision at this level should be perceived as only the beginning of a lifelong endeavour. A few delegates recommended more extensive use of multimedia approaches.

The group spent no little time discussing the particular role of guidance and counselling. The *delegate of Germany* described the comprehensive and well-organised procedures for counselling in his country. The *delegate of Australia* also described some proven procedures while saying that too much of the present counselling was "hit and miss". The consensus, however, was that counselling, though undoubtedly valuable, would never be the principal determinant of young people's career choices. Personal choices were determined by several factors, including the influence of relatives and peers. The indispensable requirement was to equip young people with the personal skills and essential information that would enable them to make wise choices according to their individual abilities, aptitudes and aspirations.

A key question to be considered was the stage in the schooling cycle at which counselling should begin and who should be responsible for it. The general view was that counselling should begin as early as possible during the lower secondary level and

that it was just as important to offer it after the compulsory school as before. As to responsibility for it, that should not be laid upon teachers unless they had first been given some relevant specialised training. Nor could it be assumed by counsellors who had been trained as psychologists rather than career experts. Many more suitably qualified, full-time career advisers were called for.

Managing Resources

There was general agreement on the need for resources in education and training systems to be better managed, and addressed to more sharply-defined priorities. The public also needed to be convinced that the systems were giving full value for money. The *delegate of the United States* referred to the excessive number of non-teaching staff that had appeared in schools; in a similar vein, the *delegate of Denmark* said that whereas over recent years there had been a fall of 25 per cent in the numbers in the age cohort in secondary schools, there had been no corresponding improvement in the quality of the provision.

However, the group also recognised that the necessary reforms and innovations in curriculum delivery and teaching methods that they had recommended would inevitably entail additional expenditures, particularly for the in-service training of teachers. It was also important to support innovation by allocating more resources to research and development. For example, as yet only a few countries were tracking the subsequent careers of school-leavers so as to identify and tackle their transitional problems. Another research priority was to identify the most effective instructional methods at different levels and in different sectors of education and training.

FURTHER EDUCATION AND TRAINING OF ADULTS

with
Mr. Jürgen W. Möllemann
Federal Minister for Education and Science, Germany

and
Mr. Phillip Goff
Minister of Employment, Associate Minister of Education, New Zealand
Working Group Chairman

SUMMARY OF THE WORKING GROUP DISCUSSION

by
Olivier Bertrand, Rapporteur

At the outset, the discussion focused on the identification of trends in the participating countries, emphasizing the importance of changes taking place in a number of areas. First, there is technological change, which demands the continuous

acquisition of new and changing skills. That requires an upgrading of skills and constant retraining. Secondly, structural change, particularly the expansion of output in the service industries, means that we have an unprecedented number of people in our community now who are forced to change jobs, often quite different jobs, jobs for which they were not prepared in their initial training. Thirdly, demographic changes mean that we are no longer able to rely primarily on well-qualified young people coming into the labour market to be the principal source of innovation and adaptation. We have to look at the human resources that we have in the existing adult population to provide that. And the fourth point, which is important when you consider the 31 million unemployed people in the OECD area, is that technological and structural change has created an unacceptably high level of unemployment which needs to be addressed through an improved strategy for the management of human resources.

In this new context, there is a growing concern among public authorities and the social partners for further education and training of adults. But, despite the heightened level of attention, it is often felt that the present level of training effort is still inadequate. It was also suggested that the time has now come for a shift of emphasis from concern with merely the level of training to a concern with its content and distribution.

The discussion that followed addressed issues relating to seven main topics: clients, providers, contents, financing, the need for data, assessment and certification of competences, and education and training markets.

Clients and Objectives

Several participants suggested various typologies of the needs to be fulfilled and of the categories of people concerned by those needs. For instance, distinctions could be established between the needs of the citizens, of the labour market and of the firms; or between the needs of the unemployed, of the workers affected by new technologies, of high-level specialists and of the active population at large.

Somewhat different views were expressed on the priorities to be assigned to those needs: several participants seemed more concerned with the improvement of the employment situation, while others would give more priority to broader social and educational objectives. The *Swedish delegate* observed that *de facto* priorities for public policies favour full employment and the labour market. But he referred to a rethinking of these policies in his country, in order to strike a reasonable balance between the three systems: for citizens, for the labour market and for the company.

Much concern was expressed for a more equitable access to training by all categories of people as imbalances were observed, for instance in favour of managers, professionals and the highly-skilled personnel when training is provided by firms. It was also observed that very often those who have already benefited from training tend to receive even more, while little is available for the under-skilled.

It was suggested that the first task facing governments was to define priorities; unemployed people and workers with a low level of skills were mentioned as deserving a priority. But, as underlined by a *French participant*, whereas in earlier days of full employment the identification of priorities among various target groups was comparatively easy, the challenge faced by public authorities in the new context was that everything had to be done at the same time and with almost the same level of urgency.

There were some references to the difficulty of assessing training requirements. The *representative from Turkey* felt that there was a need for further research on this point, especially on the implications of new technologies. But a *German participant* suggested that there was no satisfactory answer to the question of which skills are required. He was concerned by the risk of an exceedingly short-term view of training needs, based on our knowledge of the present situation. The main objective of education is to prepare people to be adaptable for a future which cannot be precisely anticipated.

Providers

Although there was some difference of emphasis on the respective role of social partners, it was generally recognised that:

- enterprises had a major role to play in further education and training;
- but they could not alone satisfy the needs of all categories of people. The unemployed population and non-active women willing to work are outside their scope of activity. They may not feel concerned with, or competent for, the upgrading of the level of general education of their employees. They may have an exceedingly short-term view of training needs.

The amount of training provided by small and medium-size enterprises is often inadequate. In order to encourage or to supplement their training efforts, specific measures may be necessary. In some countries, public authorities make available to them advisory services, while in others small firms organise themselves into groups within the same branch.

In view of the development of training activities and of the increased variety of providers and of clients, it was agreed that the concept of a training market was a useful one, with some limitations. The *French delegate* for instance suggested that a training market could be a factor of dynamism and could contribute to a better adaptation of supply to demand. But it should not be a wild market: it has to be corrected and supplemented in view of its limitations and of its failures.

The following implications of this approach emerged from the discussion:

- there should be a sufficient transparency of the training systems and adequate information of potential clients;
- dialogue and negotiation between social partners on the objectives to be pursued and on the people to be trained were considered as essential;
- public authorities should contribute in at least two ways to the development of training activities. On the one hand, they have to supplement the market by taking care of categories of people who may be left out by training programmes organised by firms (especially the long-term unemployed, but also women willing to work again and other unprivileged segments of the population).

On the other hand, they may contribute to the definition of longer-term and broader objectives for firms' programmes. This is to be achieved by providing proper incentives and, as one delegate put it, by "developing a machinery for encouraging people to make the right decisions", rather than by imposing on companies specific targets and courses of action.

It was stressed, particularly by the *United States and Canadian participants*, that the great variety of situations should be taken into account. Levels of economic

activity, and the strength of the private sector may differ between regions, so that no national programme could satisfy all needs. This implies a sufficient degree of decentralisation, an important role for local communities and a variety of approaches involving different providers. It also means that programmes should supplement each other and that investment should be maximised.

In this context, and according to the *delegate of the United States*, accountability is the key issue and evaluating the success of training programmes becomes even more important. One measure of this success may be the placement of individuals after training. It was recommended to consider further criteria which may be valid for such an evaluation.

It results from this analysis that the co-ordination of training efforts is essential. The *Danish delegate* underlined that too often there were segmented systems intended for specific categories of people and run by different agencies. Having recognised this problem, the ministries of Education and Labour in his country are now trying to break down the barriers between their respective programmes.

If basic principles concerning the distribution of responsibilities between providers for various types of clients are generally accepted, it is also recognised that national contexts differ in this respect. In *Germany*, for instance, employers may be more willing than in other countries to accept a social responsibility for the training of unemployed people who, at some time, had been employed and were therefore within their field of action. In another vein, the *Dutch delegate* mentioned that very often the public sector, as an employer, is lagging considerably behind private firms in training its own personnel.

Contents and Teachers

Obviously, the variety of needs and of types of clients — but also of people, of cultures and of languages — implies a variety of training contents. But this, as indicated by the *United States delegate*, should not prevent from defining basic skills which would constitute the first priority, while other aspects of training would meet more specific demands of the market.

The discussion of contents underlined the relationship between initial education and training and further education and training of adults. It was suggested that further education was broader than training and should start immediately after the end of initial education. The discussion was then essentially focused on the concept of further training suggested by a *German delegate*. He observed that in the new industrial context, there was hardly any difference between capacities and behaviours required of citizens and of workers. Both need to develop their personality, to show more creativity, to adapt constantly to unforeseen situations and to learn new skills. General education provided by public authorities and vocational training provided by the firm should therefore be seen as closely interlinked, complementing each other, the second one building on the solid foundations laid by the first. This also implies that vocational training should be broad-based and not over-specialised.

This approach was endorsed by other participants, such as the *delegate from Belgium* for whom a strong basic education is the best preparation for adaptation to new technologies, or the *delegate from Japan* who felt that it could contribute to create a more sophisticated workforce and a more sophisticated training market, with positive implications for employment. The development of industrial democracy, advocated by

the *delegate from Australia*, would go in the same direction: a better understanding of the company's strategy and operations, and more participation of employees in its management would be part of an educational process while contributing to a better competitiveness of the firm. It was recommended to stimulate research and "brainstorming" efforts on these new objectives and modes of further education.

The *British delegate* underlined that the training of teachers was vital if adult education and training were to be developed and their quality improved. But the *representative from Germany* pointed out the importance of looking beyond traditional forms of teaching and learning. He felt that much could also be done by changing teaching methods, promoting self-learning and improving work organisation, so that the firm would become a learning organisation.

Financing

The financing issue was not discussed as such, but rather in relation to the assessment of training needs and to the division of responsibility among providers. When participants attempted to evaluate the amount of training to be provided, the final answer was "as much as possible", though it was recognised that without proper guidance and information, there was a danger of over-training or, perhaps more properly, a danger of irrelevant training. Ultimately, it was recognised that the amount provided was obviously constrained by the availability of resources, and would depend not just on assessment of training needs, but upon how the burden of financing was shared, and what the interests of the financing partners were.

In the actual situations observed, as well as in the opinion of participants, there seems to be a broad agreement on the sharing of responsibilities between the private sector taking care of its own personnel and public authorities with responsibility for others who are in need of education and training. There were several references to national institutional contexts, giving examples of legal provisions according to which firms have to spend a minimum amount for training of their personnel. But firms are essentially guided by an economic rationality and may have to support the cost implications of wrong decisions on training needs.

In this regard, some firms do not yet fully appreciate training as an investment whose initial costs can be offset over time through benefits in the form of higher productivity and improved labour force performance with regard to quality, timeliness, etc. It was suggested, therefore, that intangible investment should be promoted. But there are also instances where large firms are willing to develop their training activities (for instance by offering apprenticeship places) beyond the level corresponding to their own needs. Financial incentives provided by public authorities may encourage them to do so. Reference was made to decisions taken in *Finland* to give financial public support to the private sector, thus using market mechanisms to adjust training activities to the longer-term labour supply needs rather than shorter-term business conditions.

The *representative from BIAC* expressed serious reservations about the trend to transfer a growing share of the costs to enterprises. He raised the issue of the proper time for individuals to follow training courses (during or outside working hours) and suggested that they should assume part of their cost.

Meeting the training and education needs of specific groups of people disadvantaged in the labour market, for example those who have been out of the labour market for child-rearing purposes for some time, or those who are unemployed,

is primarily but not necessarily exclusively a governmental responsibility. The more broad-based the education was, the more the balance of responsibility for the provision of education was seen to lie with the State. While training and education has benefited to both society as a whole and to enterprises, individuals also benefit directly from training, and therefore some responsibility for meeting the cost of training properly does lie with the individual. However, it was clear that not all individuals could meet the cost of training and retraining, and in particular for the unemployed, lack of resources, lack of ability to meet costs, should not be allowed to be a barrier to further education and training.

Need for Data

As further education and training have to satisfy an increasing variety of needs, training systems are becoming more complex and diversified. In this context, some participants consider that the knowledge of training activities, of the people concerned and of the cost involved is far from sufficient, so that improved information was a prerequisite for a fuller, proper discussion of issues and for setting up appropriate policies. It was recommended that OECD could contribute to this improvement.

Assessment and Certification of Competences

A major difference between initial and further training is that, while most countries have a formal system of assessment and certification of initial training, few have the equivalent for the further training of adults. Considering the increased diversity of forms of training, several participants felt that assessment and certification of competences should be extended beyond the formal arrangements of initial education. Not only should individuals be in a position to measure their progress, but the training they receive and the experience they acquire should be recognised outside their enterprise in labour markets, with standards being defined at least at the industry level. Countries like *Australia* are looking for new responses to these problems. But there were clear differences of opinion. Other participants expressed their concern that increasing certification better to measure competences acquired, could also bring more rigidity to the labour market by linking mobility and wages too inflexibly to new forms of certification.

Further discussion led to more clarification of the issue and outlined some areas of consensus. Certification in any case is acceptable as a way of achieving more transparency and of describing what a worker has learnt. But it should not become an inflexible system, nor prevent people from reaching another stage in their professional life. For the *French delegate*, it is a useful way of bringing an outside look at the training process and of preventing pedagogy from becoming impoverished. But certification of further education should be autonomous *vis-à-vis* the school system and should cover a wider range of experiences, including know-how and behaviours.

In considering how assessment and certification might be conducted, several references were made to modular systems of training such as those in use in *Denmark* or *Scotland*, which lend themselves to such an approach.

In light of strong differences of opinion on the subject of assessment and certification, it was generally agreed that it merited further research and exchange of experiences, and it was recommended that OECD initiate work in this direction.

Training Markets

Delegates were generally in agreement that there was such a thing as a "training market", with a diversity of suppliers — education and labour authorities, enterprises and private training groups — and equally a diversity of clients: firms, employees and the unemployed. However, while a market operates in this area, there is clear evidence of market failure. The market by itself cannot comprehensively and equitably meet all training needs. This calls for intervention in that training market; intervention, obviously, through public funding, but also through the provision of such things as consultancy and information services, so that both potential trainees and trainers were well informed about market conditions and the disparity between supply and demand of training. It was also stressed that tripartite dialogue and co-operation was particularly important in determining the nature of this intervention.

STRENGTHENING SCIENTIFIC AND TECHNOLOGICAL POTENTIAL: THE ROLE OF HIGHER EDUCATION

with

Mr. Christoffer Taxell
Minister of Education, Finland

José Maravall
Minister of Education and Science, Spain
Working Group Chairman

SUMMARY OF THE WORKING GROUP DISCUSSION

by

Stuart Blume, Rapporteur

The Chairman set out a general position which provided the grounding for the discussions which followed.

Higher education institutions are a vital social resource which has to be effectively utilised in coping with the complex and inter-related problems with which OECD countries are confronted. Rapid change in international economic relations, in occupational structures and in technology are not the least of the demands to which governments must respond. Problems are at once social, economic and cultural: they affect all areas of national life. Consequently higher education institutions, which possess such an incomparable breadth of scientific and technical skills, have a unique role to play. Nevertheless, higher education institutions cannot, generally speaking, count on any major increase in public funds. In meeting the growing and diversifying demands being made of them they will have to develop new approaches to (self)-financing. This is likely to involve them in new relations with the productive and other social sectors. At the same time academic institutions must learn to use their

existing resources better. Not only is there scope for considerable improvement in management practices but, as the *Finnish Minister* pointed out, there is also a need for greater accountability.

The challenge which all this presents to universities and other institutions of higher education should not be underestimated. Especially in Europe, they have all too often been isolated and introspective. They must become entrepreneurial: actively and effectively engaging with the problems of society without however endangering their traditional cultural functions.

With that as the point of departure, the discussion focused on the three essential areas:

- provision of advanced training;
- the advancement of knowledge;
- the transfer of technology and expertise to economic and social institutions.

Within that discussion a number of crucial issues (such as internationalisation, or the establishment of priorities) that cut across these areas were considered.

The Provision of Advanced Training

In many countries there has been a rapid expansion of professional education in the last few years, though the forces behind this, as well as the implications, differ from one country to the other. It has been argued that this "vocationalism" is largely brought about by the students themselves, and that part of the explanation is to be sought in the growing participation of non-traditional student groups. In both Australia and the United States there was evidence that the cause was *not* to be sought here. Data from the United States indicated an *absolute* decline in the numbers studying the liberal arts. The situation was viewed in different ways by delegates. The *British representative*, noting the view of employers that there were too few young people with the skills and attitudes they sought, indicated that in his country policy had been addressed to increasing the numbers of graduates in science and technology. In Australia, there was a feeling that vocationalism had gone too far. There was to be a new emphasis on a core curriculum, with specialisation postponed to later. It was above all vital that students learn how to think if they were to be the kind of employees that the Japanese industrialist had praised in his opening speech to the Conference. Despite some difference in emphasis there was in any event widespread agreement as to the importance of striking a proper balance between the provision of professional education and general education.

It followed from this difference in emphasis that the attempt to channel students to areas of study deemed of importance was a priority for some national authorities. Since employers seemed to differ in the graduates they sought, and since student sensitivity to labour market considerations seemed to differ from country to country, governments looked at matters differently. Though Sweden foresaw shortfalls in many professions in the 1990s (including doctors and teachers), concern was more usually focused on areas connected with engineering and business. Indeed in many countries the concerns which had once given rise to serious discussion of the distributional benefits of higher education had now been replaced by a concern with distribution of students between fields of study. The underlying rationality was no longer one of social justice but of techno-economics. Within this context there were, however, no clear ways of affecting student choice. British authorities had been trying to develop

programmes of industrial sponsorship of promising students and had been considering differential costs for higher education courses. In France there had been concern at the image of engineering and the applied and business-related fields, and a feeling that this needed to be changed.

It would be wrong to underestimate the complexity of the problem to which attempts at channelling students have sometimes seemed an answer. Perhaps it takes too much as given, unchanging. Was it not possible, for example, to try to develop new kinds of bridges between the social sciences and companies? The Danish employers federation had taken the lead precisely there. As the *Dutch delegate*, a leading industrialist, pointed out, the role of educated workers in large industry is changing. As the share of the total workforce with higher education increases, specific technical skills become less important. The challenge to higher education was to inculcate the capacity to work in multidisciplinary groups. Higher education would have to become far more interdisciplinary.

At the same time, picking up a point made by the Chairman in his opening remarks, universities and other institutions would have to become much more entrepreneurial. Learning more effectively to respond to opportunities had implications both for advanced training and for research. It was also a matter which public authorities would have to approach with caution. It was undoubtedly the case that government would have to encourage higher education institutions to look differently on state provision and on the need to be more innovative. Yet there were dangers, even temptations, here. It was vital that the autonomy of higher education not be further compromised: that universities not be driven into positions of complete dependency. Perhaps a suitable middle way lay in the development of new funding mechanisms. The *Australian delegation* referred to the possibilities of inviting universities competitively to bid for new initiatives.

The Advancement of Knowledge

There was widespread agreement that higher education systems have a vital role in research addressed to areas identified as of national priority. Here too, however, caution was necessary if other vital functions of the academic system were not seriously to be impaired. As the *Greek delegate* reminded the group "curiosity is the mother of invention", and higher education institutions had a unique role in curiosity-oriented research. Curiosity-oriented research, uninfluenced by national priorities, had to be allowed to flourish. Of course, the practical implications of a view from which none could dissent depended very much on national circumstances. In countries which had decided to increase their investments in research, including Finland and Spain, growth in both fundamental and priority-oriented research was possible. The Finnish government had decided on a regular annual increase in investment in basic university research. The *Finnish Minister of Education and Sciences* had pointed out the importance of the longer term, urging fellow ministers not to "lack the courage to guarantee sufficient prerequisites for basic research even when no short-term results can be expected".

In exchange, however, academic institutions had to be willing to guarantee the quality of their research (and education). Finnish universities were thus being required to monitor their performance and to try to show that the extra resources were producing results. Quality was a concept which in many countries was looming ever

larger. There was a growing concern to try selectively to direct funds for research, and especially curiosity-oriented research, to institutions of demonstrable international quality.

If extra resources were to be provided for curiosity-oriented research, in exchange for a greater measure of accountability, then these resources would have to be spread over all disciplines. There had been a tendency on the part of many national authorities to identify "relevant" research with a limited range of technology-related disciplines. A number of delegates had spoken against this. Nevertheless, the fact remained that in the social sciences and the humanities a serious demoralization had taken place. This was in part a consequence of funding policies, to be sure, but it was also due to the language in which research priorities were typically discussed. The *Chairman* drew attention to the need to avoid this kind of "rhetorical marginalization", which followed from a facile identification of social utility with immediate industrial relevance. The social sciences and humanities would necessarily have to share in any extra resources provided for curiosity-oriented research. They would not, of course, escape the need to account for their use of resources and to use resources effectively and efficiently.

Notions of the relevance or irrelevance of, for example, the social sciences, necessarily led to consideration of the priorities which had been set for research within the higher education system, and the means by which this took place. There was a need for further consideration of the processes by which research priorities were set. Committees charged with such tasks would need adequately to reflect the *variety* of societal interests in the products of research. It was clear that social concerns such as regional disparities or occupational health properly generated important research priorities. Here too mobilization of the higher education system was vital.

In striving after improved quality in academic research, internationalisation had an important role to play. This had already been recognised by a number of smaller Member countries. Sweden, for example, had carried out a well-known and highly effective series of international evaluations, and there were other experiences in inviting foreigners to serve in peer-review committees. In its planned major programme of special support for the Centre of Excellence, the government of Canada planned to use international juries in selecting these. Of course there is more to quality than its assessment, and schemes for cross-national exchange of students and staff in higher education are also quite properly receiving increasing support. There were other senses in which the international dimension was becoming more and more important in science and technology policy. One was the growing importance of multinational ventures in high technology, such as EUREKA. Admittedly, higher education institutions had thus far played little role in programmes of this kind. But if they were to become entrepreneurial in the way the Chairman had indicated, then they would have to start competing for their shares of programmes at the forefront of technological progress. A final dimension, unlikely to be forgotten, relates to cost. The internationalisation of major research facilities is a potentially important means of cost-sharing. Inviting other national authorities to share in the costs of constructing and running a large research installation could be doubly productive. Not only would it reduce the costs, but the necessarily more intimate scientific contact between the two research communities ought in addition to stimulate competition and quality.

Thinking both about the further development of the sciences themselves and about the "relevance" of research led inevitably to consideration of the special

circumstances of interdisciplinary research. It was not only that employers preferred to hire graduates with a somewhat interdisciplinary training (although evidence enough that this was the case had been presented). As the *Austrian and Australian delegates* both pointed out, new breakthroughs in science and technology often take place through interaction between traditional disciplines. Structures and funding mechanisms would both have to be adapted if higher education institutions (perhaps especially in European Member countries) were to break out of their over-rigid academic disciplines. There were major difficulties here, not least in that under situations in which resources are squeezed, faculties have a tendency to fall back on their own traditional and central interests. In many cases furtherance of interdisciplinary research and true interdisciplinary education will require strong central leadership or management.

Technology Transfer

How are the expertise and the knowledge embodied in higher education systems effectively to be put at the service of society? This very general formulation can be broken down into a number of issues which are most easily analysed apart from one another. Education and training are means of transferring knowledge into society. The notion of technology transfer, which is widely discussed in present-day science and technology policy, is another aspect of the general problem. It relates to the effective transfer of the results of academic research into industrial production.

In many countries the possibility of improved exploitation of research carried out in higher education institutions has been much debated. A number of concrete steps have been taken, some of which have been discussed by the OECD[1]. The important contribution which academic research and institutions could make to regional development has also been spelled out. Since then, and in the light of experience, further steps have been taken. In the United Kingdom, for example, a Centre for Exploitation of Science and Technology has been established. Yet in discussion it was clear not only that there was still a good deal of dissatisfaction, but that in many respects the underlying problems were quite diverse. For multinationals in advanced sectors, as the *Dutch representative* pointed out, the problem in collaborating effectively with higher education institutions was frequently that of finding a suitably sophisticated partner. Here there was no question of effective transfer of expertise from higher education to manufacturing industry: the purpose of the collaboration was quite different. At the other extreme, as the *delegate from Yugoslavia* pointed out, the problem was often that the level of research intensiveness in much of industry was so low that little dialogue with the universities was possible.

This diversity of problems naturally admitted of no simple and single solutions. What was undoubtedly of general validity was the need, pointed out by the *British delegate*, of thoroughgoing cultural change both in academic institutions and in industry, if effective collaboration is to take place. Academic researchers and their employers have to be motivated to take an interest in the exploitation of research, through suitable reward and through adequate protection of intellectual property rights. In addition, the lack of status attaching to interdisciplinary research, synthesis, review, rethinking the significance of existing knowledge has somehow to be modified. Adequate institutional motivations are necessarily of a different order; the *Finnish Minister* argued universities must be in a position to negotiate from strength with

potential industrial partners. Their basic resources and capacity to engage in basic research must be secure. Finally there arose the question of the kinds of firms and the sectors with which co-operation was of particular importance. In this regard, the Finnish Minister, underlining the importance of the service sector in particular and to the central role it plays in the economy, proposed intensifying the interaction between it and the universities.

REFERENCE

1. OECD (1984), *Industry and University: New Forms of Communication and Co-operation*, Paris.

CONCLUSIONS OF THE CHAIRMAN[1]

The Hon. John Dawkins, MP
Australian Minister for Employment, Education and Training

First, I would like to make some brief comments on the significance of our Conference and the context in which its conclusions should be interpreted. I will then concentrate on the major conclusions we have reached, noting some of their implications for future action within Member countries and by the OECD itself.

This Conference has been significant for a number of reasons.

It is a **clear expression**, first, **of the policy pressures** currently facing all Member countries of the OECD: pressures **for continuing structural adjustment and social change**; pressures **for micro-economic policy measures to complement traditional demand management policies**; pressures **for further improvements in productivity performance**; **and pressures associated with changes in demographic structure, technology and the organisation of work.** For some of us the urgency of these pressures has been sharpened by changes in our competitive position in the international marketplace.

The Conference has been significant also for the substantial measure of convergence evident on a range of key issues. Most fundamentally, we share a common concern **to ensure that our education systems are responsive to the demands of economic, technological and structural change, and indeed contribute to the process of change.** At the same time we have noted the plurality of purposes served by the educational process, and the need for investment in education to be directed not only to better economic performance but also to improvements in social functioning and the quality of individual life. We recognise that failure in education and training — in the form of drop-out, low skills or poor retention — represents a wasted investment and a cost to society.

Our Conference has been greatly strengthened by the active participation of employer and union representatives, as reflected in the positive statements contributed by both BIAC and TUAC. We have benefited greatly also from the excellent papers prepared by the Secretariat whose analysis, which was broadly supported by participants, has provided a strong foundation for our discussions.

I do not overlook the differences that have emerged in the course of our discussions — differences of emphasis and degree, and even occasionally of viewpoint. Such differences are not surprising, reflecting as they do the significant variations in our national circumstances and institutional arrangements. On these grounds alone there is good reason for diversity in our particular policy measures and practical

approaches to the implementation of change. It would be foolish, and futile, to seek total agreement on such matters.

MAIN CONCLUSIONS

Against this background I turn now to the major conclusions reached over the past two days. For the reasons just stated, I present these as general conclusions only, rather than as specific recommendations to national governments.

We recognise first that education serves many important roles in our society, one of which is **its contribution to the performance of our economies and labour markets.** That contribution will itself be most effective when it is part of an overall strategy of economic, regional and enterprise restructuring and modernisation. Beyond this, education caters for a wide range of social, cultural and individual interests, which in turn need to be appropriately protected. We note the clear consensus from all three working groups, supported by the statements of TUAC and BIAC, on the need for a general educational foundation to be the basis of preparation for an active working life.

The rapid pace of economic and social change imposes pressures in all areas of national and community life. Effective responses to these pressures will require a continuing emphasis on the social sciences and humanities as important instruments in the process of adjustment.

There is substantial uncertainty about the precise speed and directions of change in the future. While strategic planning of education will be important, attempts at detailed forecasting of future skill requirements have proven notoriously unreliable in the past. **What is needed, rather, are co-ordinated strategies within government, and actively involving other parties, which promote maximum flexibility and adaptability on the part of enterprises, education systems, labour markets and individual workers.** These strategies should include such elements as joint assessments of trends in likely requirements for different skills, and the transmittal of such information to students through counselling and other means. A key objective of such a flexible approach must be **to impart to all young people a broad base of transferable skills,** while taking into account the special needs of particular groups. We need also to explore new methods to promote the development of skills and attitudes which equip the workforce to adapt to and influence change. Consistent with broader social trends and requirements, the skills in question include qualities such as the habit of learning, curiosity, creativity, initiative, team-work and personal responsibility.

An approach along these lines carries **important implications for the practices and attitudes of employers. The private sector in particular must assume primary responsibility for the provision of training and retraining opportunities for adults.** Moreover, such opportunities need to be extended to all members of the workforce, not merely to a select elite of higher-level managers and technical staff. **Likewise, it is incumbent on industry to make the most effective possible use of the skills and attributes of workers,** both by expanding job opportunities and by enriching the content of jobs through changes to work practices and organisation.

We discussed also the importance of defining **the main elements of a broad and general education. A core curriculum imparting basic skills** is one essential

requirement. Within this, a range of particular elements as diverse as information technology, language training and attitudes and values will need to be incorporated, often on an interdisciplinary basis. Equally important is **the ability of our education and training systems, both public and private, to deliver these new directions through adaptable processes and suitably qualified teachers and training providers.**

Career education and counselling will play a vital role in enabling young people to identify their future work options and to appreciate the value of education and training in pursuing those options; and particularly in providing the basis for informed choices.

Our discussions have underlined the fact that no single model of education and training will have universal application across all countries or even within any particular country. A diversity of approaches is needed, tailored to the needs and abilities of particular groups of students. An essential complement to such diversity, however, is **an articulated set of national arrangements for the assessment, certification and accreditation of skills.** Such arrangements should give appropriate weight to experience gained in different settings — whether formally in an educational institution or more informally within employment. In particular, also, they should enhance rather than restrict the transfer of academic and vocational credits, the portability of qualifications, and the mobility of workers in the labour market.

The productive use of advanced technology will require new forms of work organisation, more participative management, more autonomous and creative work styles and new forms of individual and group learning at the work place. Collective bargaining will play an important role in these developments. There will be a growing convergence, in both initial and further education, between those skills seen as vocationally relevant and those personal and social competences that emerge from general education. We have noted the **important contribution of our higher education institutions to economic and social development**, particularly through the high quality of their general and professional courses and the extensive range of their basic and applied research activities. We have agreed also that these institutions should retain their autonomy. An important issue to be addressed, however, is how government, industry and higher education institutions might interact to ensure that priority is given to national and regional economic and social objectives, including the improvement of the institutions' own efficiency and responsiveness.

Institutions of higher education cannot expect any major increase in public funding. **They must become more entrepreneurial in outlook and increasingly self-sufficient in funding.** New funding models which encourage institutions to bid competitively for new programme funds related to national and regional priorities would be one means of encouraging this.

There is a clear trend towards greater interdependence between the economies of different countries, as well as growing internationalisation of education and training systems themselves. In response to these trends, action should be taken within countries to give increased attention to the teaching of foreign languages, international exchanges of students and staff, and the internationalisation of research. There is also a useful role for comparative studies across countries of educational issues, developments and performance.

At all levels of the education and training system there will be a continuing need to manage resources better. Efficiency, effectiveness and enhanced

productivity will continue to be important issues which managers and others in the system must address. It is recognised that many demands likely to be placed on the system will require additional resources, particularly where systems are expanding or there is a need for investment in innovation and quality enhancement. Individual countries will need to address the question of who should provide those additional resources, what priorities should be set, and **how the costs might be shared amongst governments, individuals and the social partners.**

An active involvement by all parties in the education and training process would assist in the development of training markets, in which many different styles and contents of training would be available to individual workers (e.g. both in-company and outside the company; for the unemployed and small and medium enterprises, and so on). The role of governments and the public sector in such markets would be not only to participate in them as deliverers of training but also to play a co-ordinating and standard-setting role.

Finally, countries will differ in the manner in which responsibility for the provision of initial and further education is divided between the government and others. However, all countries need appropriate mechanisms to allow agreement to be reached on **how responsibilities are to be divided.** There can be no expectation that governments alone should bear these responsibilities.

DIRECTIONS FOR FURTHER WORK

Across all the issues discussed at this Conference there have been some strong similarities between OECD Member countries, but also some significant differences. We differ, for example, in our particular sets of economic circumstances and in the mix and speed of the adjustments required. We differ also in the balance between public and private sector efforts in education and training; in the mix between basic and applied research, and in the present balance between vocational and general education.

Accordingly, while the conclusions I have just outlined provide some useful guidance on policies to be followed by all Member countries, the details of policy approaches will necessarily differ between countries according to their particular sets of economic circumstances, social objectives and institutional arrangements. We have all, I think, gained much from our frank discussion of common issues and problems and a joint consideration of possible solutions.

Our Conference has also highlighted important directions for the future work of the OECD itself. Clearly, the relationship between education and the economy should continue to be accorded a high priority in its future programme of work, and specific issues to be addressed should include:

- improvements in the data base for international comparisons of education and training;
- international studies of participation in further education and training;
- comparative studies of private sector investment in education and training;
- arrangements for the assessment and certification of skills and competences in further education and training;
- international studies of the educational attainment of the population and labour force;

- the implications of developments in collective bargaining and wage fixation arrangements for further education and training;
- the continued development (via CERI, the Centre for Educational Research and Innovation) of outcome indicators for education, as a basis for international comparisons and increased accountability;
- the extension of current OECD studies on the funding of higher education to include an analysis of the impact of different funding options on the responsiveness of institutions.

In conclusion, I would like to thank on your behalf a number of people who have contributed substantially to the success of this Conference:

- The chairmen of our three working groups: Mr. Robert Carneiro, Minister of Education, Portugal; Mr. Phil Goff, Minister of Employment and Associate Minister of Education, New Zealand; and Mr. José Maravall, Minister of Education and Science, Spain;
- other ministers and heads of delegation and their colleagues;
- business and trade union representatives, whose contributions have formed a vital part of the total debate;
- and the Secretariat for their excellent discussion documents and assistance at our Conference: in particular Mr. Ronald Gass, Mr. George Papadopoulos, Mr. Gregory Wurzburg and the interpreters.

NOTE

1. These conclusions were adopted by the Education Committee and noted by the Council on 23rd September 1988.

Appendix

JOINT BIAC/TUAC STATEMENT TO THE OECD INTERGOVERNMENTAL CONFERENCE ON EDUCATION AND THE ECONOMY IN A CHANGING SOCIETY

In 1986, BIAC and TUAC, following a constructive dialogue, presented the OECD Ministerial Council with a joint statement entitled "Full Employment and Growth as the Social and Economic Goal".

The following essential items represent some of the points of agreement related to education issues which were specifically mentioned in that statement:

1. Effective education, training and retraining systems facilitate labour market flexibility;
2. Social partners have a common cause to keep education/training institutions informed of labour market needs;
3. Adjustment capacities of present education systems are too limited. This has been a cause of much unnecessary unemployment among young people.

Building on these, BIAC and TUAC want to continue the dialogue on topics of mutual concern. This dialogue should continue on the following basis:

- Recognition that structural change is posing new requirements for the labour market;
- Recognition that there is a strong link between education, training and employment opportunity, and that this link can only be fully effective with constructive growth and employment policies;
- Recognition that education, and especially higher education, without attenuating its cultural role, could be more responsive to the needs of industry and the economy; and
- Recognition that further education, training and retraining are of utmost importance to maintaining a competent and flexible workforce.

TUAC and BIAC have appreciated the opportunity to participate in the OECD Conference on Education and the Economy in a Changing Society, and look forward to further discussions and co-operation on these issues with the OECD and the governments, both nationally and internationally. Both sides expect governments to be responsive.

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